

THE IRON AGE

THURSDAY, SEPTEMBER 12, 1889

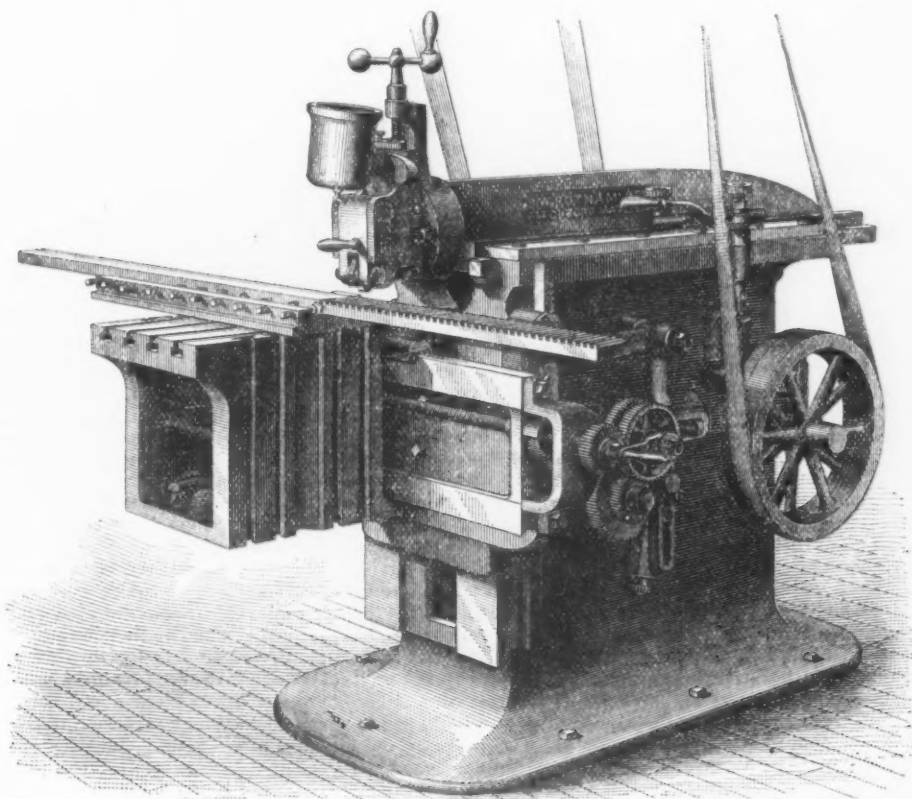
Rack-Cutting Planer Attachment.

In our issue of February 28, 1889, we described and illustrated the most important features of the shaper built by the Putnam Machine Company, of Fitchburg, Mass. We now present an engraving of a rack-cutting attachment intended for use with this shaper. No dismantling of the shaper is necessary in order to apply the device nor are its usual operations interfered with. The rack-blank can be held in the ordinary shaper-chuck, although a special chuck provided with side screws and surface clamps is furnished when desired. The table is fed horizontally or across the path of the cutting tool by hand, spacing-wheels being employed to

because they would not cover their barest necessities. Their statements were corroborated by an investigation made by disinterested parties, who then set to work to effect an agreement upon a better basis. The severe competition in their natural markets from coal mined in other localities at lower cost is claimed by the operators to be the foundation of the Illinois labor troubles, and it remains to be seen whether a better era really has dawned for their suffering workmen. J. S. Lord, secretary of the State Board of Labor Statistics, has received all the returns on the output of coal in Illinois for the year ending June 30 last. They have not yet been tabulated, but they show a net decrease of 258,000

pendent of the city. The Otis Steel Works depend on the city entirely. The Union Steel Screw Company are perhaps most affected by the shortage of water and are seeking a remedy. Their consumption is 56½ tons of water daily. An 8-inch pipe supplies in addition Schneider & Trenkamp, the Standard Lighting Works, the Brush Works, the Chisholm Shovel Works, the H. P. Nail Works, Bishop & Babcock, Leighton & Brew, the Buckeye Bridge Works, the City Forge, and other establishments. The difficulty complained of arises from the growth of the city.

The following is the statement of the Boston and Montana Consolidated Copper and Silver Mining Company for the year



RACK-CUTTING ATTACHMENT FOR PUTNAM SHAPER.

give the desired distance between the teeth. The vertical movement of the table is accomplished automatically. The accuracy of the work performed by the attachment is remarkable; racks cut at different times and placed together are found to fit one another perfectly.

The Illinois Coal Troubles.

There is some prospect now that the disagreement which has so long existed between the coal operators of Northern Illinois and their employees will soon be terminated. A compromise will be made which will enable the operators to mine coal at somewhat lower rates than previously and at the same time will give the workmen a higher rate of wages than the operators have insisted upon establishing. The mediators were the State authorities, who began to realize most keenly the stigma put upon the Commonwealth by the long-continued sufferings of the locked-out miners, who claimed that it was useless to go to work at the wages offered them

tons, as compared with previous years. The decrease is entirely in the districts lying north of Morgan, Sangamon and Macon counties. The fourth and fifth districts, lying south, have an increase amounting to 437,000 tons. The decrease in the other three districts north is 694,000 tons. The largest producing counties are St. Clair, LaSalle and Madison, in all of which there is a large increase over 1888. It is shown by the reports that the industry in Southern Illinois is in a most flourishing condition. Electricity is employed in many of the mines for driving the machinery and also for lighting purposes, using incandescent electric lamps. The miners and the operators profess to be pleased with the present condition of affairs. The distress in the northern districts of the State, it is claimed, is attributable to the prosperity of the miners South.

Manufacturers in Cleveland are troubled by the short supply of water, and the American Wire Works are erecting a plant for pumping water from the lake, inde-

ended June 30, 1889: Product of matte and ore, 42,490,698 pounds, yielding 24,204,844 pounds of refined copper, which was sold for \$2,807,244; product of silver, 152,993 ounces; sold for \$116,291; received from gold sales, \$68; total gross receipts from product of mine, \$2,923,603; total running expenses, \$1,908,686; mining profit for the year, \$1,014,917. After deducting the amount paid in dividends, for property bought, construction, cancellation of bonds and interest on bonded debt, the balance of assets is \$339,458.

The New Era Exposition at St. Joseph, Mo., was formally opened on the 3d inst. and will continue until October 5. The opening exercises were witnessed by 25,000 people and consisted of a parade and speeches by Hon. J. Sterling Morton, Gen. R. A. Alger and Major William Warner. The exposition company expended \$150,000 in decorating the grounds and erecting the buildings, and the citizens of St. Joseph expect important results to accrue from it to their city and the Missouri Valley.

THE PARIS EXPOSITION.

FRENCH HEAVY HARDWARE.

The poverty of France in iron ores outside of that part of the Luxembourg district which laps into her territory is reflected to some extent in the absence of any striking displays. Entering the French metallurgical court from the side of the Avenue Labourdonnais, one of the first cases which attracts attention is that of the manganese ores from deposits in the departments of the Saône, Loire, Rhône and Allier, controlled by Chamussy & Co., at Romanèche, and of Joesnin, Mazoyer & Cadot, at Romanèche-Thorins. Near it a French company, the Compagnie Française des Mines de Cuivre d'Aguas Temidas, of 47 Rue Taitbout, Paris, have a fine plan of the Confessionarios pyrites mine in Spain, the rock showing the following analysis: Sulphur, 53.15 per cent.; iron, 46.60 per cent.; silica, 0.20 per cent.; arsenic, 0.02 per cent., and selenium 0.012 per cent. Following along in the court, we enter that part which includes the greater part of the display of heavy hardware. In the immediate vicinity we note exhibits of wire cloth by Bouvier Fils Ainé, of Lyon and Nîmes; Mulatier & Silvent, of Lyon; Achille Weill & S. Dreyfus, of Montrouge (Seine), and E. Pelletier Successeur, of Conneré (Sarthe). The latter shows cloth with 48,400 meshes of 3 mm. brass wire in 29 mm. square. Some good wire netting is manufactured by G. Sohler, of Amberg-villiers-la-Courneuve; A. W. Elliott, of Bornel (Oise), and Raymond Gariel, of 2 Quai de la Mégisserie, Paris. The famous Compagnie Le Nickel, who developed the nickel deposits at Nouméa, New Caledonia, congesting the European markets with their product, and established works at Septèmes, France, Iserlohn, Germany, Glasgow and Birmingham, have gathered in a case the showy ores from their deposits and a number of examples of their product. The history of the company has pretty well proved that the lowering in the price of a metal like nickel is not responded to immediately by a prompt relative increase in the demand. It is an idea held by too many that the stimulus of low prices upon consumption acts almost immediately. When copper first dropped below 10 cents from the former normal level of 16 many sanguine producers expected a rush in the demand. It came very slowly indeed, and it seems very probable that disappointment will follow in the same way the hopes of those who are identified with the cheapening of aluminium and its introduction as one of the leading metals in the arts. Among the handsome trophies of the brass and copper, though isolated from them, is the arch of rolled brass, wire tubes, &c., by E. Hemerdinger, of Rugles (Eure). The Société Anonyme des Charbonnages des Bouches du Rhône shows the well-known Brunton tunneling-machine, which was tried at its Gardanne mines and at the channel tunnel, or Tunnel de la Manche, as the French call it. The copper arch is backed by columns and an arch of wire netting of J. Mouton, 44 Rue Amelot, Paris, and St. Denis. Copper and brass wire, rods and rivets of good appearance are shown by Houry, Aboilard & Cie., of Paris, and Ch. Goguel, of Montbéliard (Doubs). E. Verschave Fils, 17 Rue Pavée, Paris, showing only wire. A very interesting exhibit is that of Ch. Jamelin Fils, of Rue St. Maur, 99, of drawn shapes, tubes, &c., of copper and steel, among them being shapes for locks and keys. Handsome brass and bronze castings and a number of other articles are made by P. Chachoin Fils, of Paris.

In builders' hardware a number of exhibitors are prominent. In some specialties the entire construction of the articles differs from that general in this country. Thus the windows and many doors are opened by the turning of a handle which through a long rod engages above and below with a hook. The door-handle generally supplies the places of our knob and there are minor differences. On the whole this class of hardware is more conspicuous and has led the French, naturally, to give it great attention so far as its artistic features are concerned, however inadequate it may be mechanically. Among the fine displays artistically are those of R. Garnier, Brun-Cottan Frères, successeurs of 30 Boulevard Contrescarpe, Paris; Picard Frères, 4 Rue St. Sauveur, Paris, and H. & E. Vaillant, Fontaine & Quintart, 181 Rue St. Honoré, Paris, the latter also showing some fine forged iron-work. Springs and casters are produced by Ch. Dallemagne, of Paris, while the latter in good quality are exhibited by Bourdillat Fils & Pamret, of Elincourt (Oise), and the former by Jules M. Tarpin, of 189 Rue du Temple, Paris. The latter has also fine sheet-steel stamped blanks. Locks, butts and door-handles are produced by E. Guillet-Fagot, of Vivier-au-Court (Ardennes), while F. le Monnier-Lenicolaï, at Sourdeval-la-Barre (Manche), has locks, candlesticks, gimlets, shears, &c. A rather rough-looking lot of butts is displayed by F. Cossardeaux, of Guignicourt-sur-Vence (Ardennes), and a lot of shovels, spades, forks and axes by Les Enfants de Mme. Baletot, Blamont (Meurthe-et-Moselle) do not reflect much credit upon that lady or her offspring. A more interesting though not showy collection of goods are brass and steel rods and drawn rods for watch-gears by Alfred Moyse, 23 Rue de la Mare, Paris.

Almost hidden in a corner is an exhibit which recalls efforts made in a similar direction without much encouragement in this country. The idea to combine the strength of iron or steel wire and the electrical conductivity of copper by producing a compound wire having a steel or iron core has been attractive to inventors. Edouard Martin, of 7 Rue Bleue, Paris, and Joinville-le-Pont (Seine), has evidently been working hard in this direction. Among the samples of his product which he exhibits is a roll of $\frac{1}{2}$ mm. compound wire weighing 46 kg. 26,323 m. long. No data are given concerning the methods of manufacture, but specimens are exhibited by M. Martin which indicate that his compound wires are capable of undergoing considerable torture without leading to a weakening of the bond between the two metals.

Among the articles which have strayed into this part of the exposition we may note incidentally a quadruple punch by Picard Frères, 4 Rue St. Sauveur, Paris, mounted on a central pin and round base. It is stated that it will punch 10 mm. holes through 7 mm. metal, cut flats 40 x 7 mm., rounds up to 14 mm. and 35 mm. angles.

The finest line of products in the hardware section, most effectively displayed, is that of the firm Les Fils de Peugeot Frères, of 2 Rue Béranger, Paris, the works being at Valentigney (Doubs), Héricourt and Beaulieu. Among the articles shown is a 14-wire gauge bandsaw, 10 inches wide and 123 $\frac{1}{2}$ feet long, made without brazing; a second one, for cutting metals, 74 feet long, 3 $\frac{3}{8}$ inches wide, 26 mm. thick on the tooth edge and 17 mm. thick on the back edge. The firm make steel strips for lithographic pens and for suspending pendulums. One of them shown was 359 m. (upward of 1100 feet) long and 0.06 thick. They have fine lines of carpenters', masons' and lock-makers' tools, twist drills, files, springs, shears, hay-forks, spades, bicycle-fittings, &c., the whole being by

far the very best display of hardware in the French section. Bricard Frères, of Woincourt (Somme), show locks; E. Dervaux-Ibled, of Vieux-Condé (Nord), and A. Fangier & Cie, Lyon; Priqueler Frères, Plancher-les-Mines (Haute-Saône); Charles L. Le Cerf, Rue Pajol, 27, Paris, bolts and rivets; N. Vuillaume, Boulevard de la Vilette, 50, Paris, bolts, rivets, taps and dies.

A neat exhibit of horseshoe nails, tacks, wires and small shapes is made by Reverchon & Cie., Closmortier (Haute-Marne), and in mill picks, shears, hammers, &c., a similarly creditable collection comes from Despret Frères, Milourd-sur-Anor (Nord). Ebstein Frères, of Farville, Nancy and Pont St. Vincent (Meurthe-et-Moselle), file-makers, quote the following test of their products, made by the Chemin de Fer de l'Est. The following weights were removed in ten hours with one side of files 40 cm. long per sq. cm. of working surface:

	Iron. Grams.	Bronze. Grams.
Flat file.....	6.237	13.041
Bastard file.....	5.315	12.710
Flat file.....	5.725	12.863

Among the other file-makers noted were St. Edme Rémond & Fils, 138 Rue St. Maur; E. Roussel, 14 Rue Popincourt; Charles Bosquet, Boulevard du Temple, 14, and Mangin, Ch. Lamy & Cie., 48 Rue des Gravilliers, all in Paris. Differing in appearance and character from the exhibits in its immediate vicinity is that of the Société Electrometallurgique Française, 43 Rue St. Georges, Paris, with works at Froges and at Champ (Isère). The company show pure aluminium, 10 and 30 per cent. aluminium bronzes, samples of aluminium brass with 64 per cent. of copper, 33 per cent. of zinc and 3 per cent. of aluminium, 10 per cent. silicon copper and 15 per cent. ferro-aluminium. Besides these raw materials they have the products in the form of gearing, wire, castings, and as conspicuous objects, aluminium bronze spoons and a tea-set of the same made of an alloy of 95 per cent. of copper and 5 per cent. of aluminium. The golden color is really quite good and gives promise of some possibilities, although we question whether the demand for table-ware will run heavily in this direction. The majority of people will avoid the look of pretentiousness which imitation of the yellow metal naturally brings with it.

Among the other exhibitors in the heavy hardware section are Letrotteur & Boulevard, Boulevard de Charonne, Paris, who claim the distinction of having furnished the bolts for the Eiffel Tower, and Bosquet & Paruit, of Arreux (Ardennes), also makers of bolts. Horseshoes, generally poor in appearance as compared with American standards, are shown by Constant A. Demeulle, of Val-David (Eure); P. Courvoisier, of Fontainebleau, and Ch. Volant, of Tours. A neat lot of bolts, nails and horseshoe nails comes from Bouchacourt, Magnard & Cie., of Fourchambault (Nièvre), while Laurent-Colas, of Bogny-sur-Meuse (Ardennes), has a rather rough-looking lot of carriage hardware. Saws, bits and augers apparently fine in quality are shown by E. Menissier, 46 Rue de Chemin Vert, Paris, a comparatively poor exhibit of the latter being made by F. E. Phillipi, Rue Oberkampf, Paris. In heavy hardware, jacks, vises, iron blocks, &c., Sculfort-Malliar & Meurice, of Maubeuge, make a creditable display, and a neat lot of stove elbows is shown by H. Bertrams, 60 Rue St. Maur, Paris, who glories in branch works at Siegen, Germany, Brussels, Vienna and Moscow. E. Jonte, Sr., 42 Rue Sedaine, Paris, has a neat display of wire staples, nails, tacks, rods and springs, while François Laurenty & Cie., of Douzy (Ardennes), have tools, spades and axes. The latter are clumsy in shape, a similar criticism applying to those of

Hector Remongin, of Vicq (Haute-Marne), who also displays butchers' knives, hoes and gardening implements. Taps, dies, bevels, iron squares neatly made and attractive are exhibited by J. Marechal, 24 Boulevard Sebastopol, Paris. Among the creditable exhibits, too, is that of Dandoy-Mailliard, Lucq & Cie., of Maubeuge (Nord), who have wrenches, iron blocks, punches, anvils and jacks.

Reviewing the whole field as represented by the exhibits named, there is very little, so far as quality, finish, handiness and neatness, which need to be held up to American makers as a higher standard to aim at. It is noticeable that a great part of the product apparently comes from

knew that the application of American inventions to the machinery of the steamship had increased her speed one knot an hour, and that nine-tenths of the capital of the Inman Line was American money. A State Senator of New Jersey, Mr. Warwick, confirmed what Mr. Medill said of her ownership.

The Weems Railway System.

In former issues we have described the general characteristics of the system of transportation designed by D. G. Weems and operated by the Electro-Automatic

on springs and is entirely independent of the driving-wheels or electric motor. The armature end of the field is carried by a frame bolted to the bearing, while the opposite end is merely supported by the car. This construction permits of the movement of the car body, due to the action of the springs, without in any way affecting the relative positions of the armature and field. The axle of the driving-wheels constitutes the shaft of the armature. This direct connection, as we may term it, of the armature and the drivers is the direct cause of the most unusual speed reached by this system—a speed not probable with an electric motor which has to transmit its power through gearing or other device to

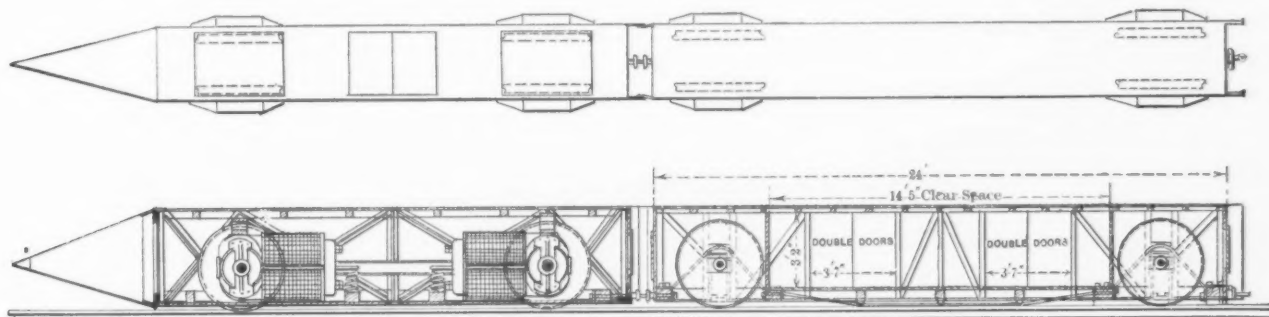


Fig. 1.—Plan and Longitudinal Sectional Elevation.

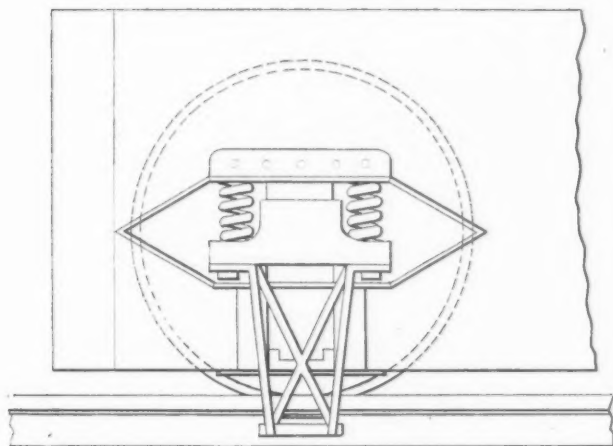


Fig. 2.—Side Elevation at Motor.

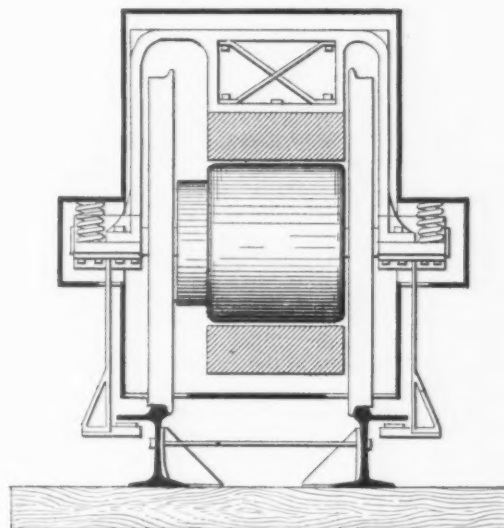


Fig. 3.—Cross-Section through Motor.

THE WEEMS ELECTRIC RAILWAY SYSTEM.

small shops, there being only a few instances where a wide range of articles is made on a very extensive scale. In the whole section reviewed hardly a single attendant was to be found and no literature was available to aid as a guide in estimating the magnitude of the works exhibiting.

A majority of the stock in the Inman Steamship Line, to which the City of Paris belongs, is said to be owned by Americans. Andrew Carnegie is reported to be a large owner, and the late Mr. Thaw, of Pittsburgh, was said to hold stock valued at \$1,000,000. The editor of the *Chicago Tribune*, Mr. Medill, who was a passenger on the City of Paris on her recent fast trip, is reported to have explained that the ship and the results attained by it were due to American enterprise backed by American capital. He

Transit Company of Baltimore, Md. We now give views showing more in detail the arrangement and details of construction. The system is intended particularly for the rapid transportation of express matter and mails, and on the experimental line, with grades of 108 feet to the mile, a speed of over two miles per minute has been attained. The motor-car represents a parallelogram $3\frac{1}{2}$ feet square at the ends and 18 feet, the track being 2-feet gauge. It is pointed in front, as shown in Fig. 1, which also shows the package car, which is 24 feet in length and is joined to the motor by a telescopic joint in order to reduce atmospheric friction. This object is further attained by the fact that all the wheels and electrical appliances are placed within the walls of the cars. The method of supporting the car on the axles is shown in Figs. 2 and 3. It will be noticed, Fig. 3, that the body of the car is supported

the drivers. Derailment is prevented by a horizontal flange on the head of each rail, under which is a shoe carried not by the car, whose distance from the rails varies by reason of the springs, but by a frame hung from the bearing. One rail carries both the outgoing and returning current.

The train is controlled from a generating station, and these stations will be placed as far apart as may be deemed necessary. Special appliances will inform the operator in charge of a station of the exact location of the train at all times, and from there its movements will be controlled. A track on a more extended scale is now being erected at Garden City, Long Island, and on it will be made more severe tests to ascertain accurately the speed and carrying power. Should this prove as successful as the shorter one built at Laurel Hill, it is more than probable that the plans will be enlarged to embrace passenger traffic.

Elliptic Gear-Cutting Machine.

Our drawings illustrate a machine recently invented by Geo. B. Grant, of Maplewood, Mass., the well-known authority upon gears and gear-cutting. The machine shown is an attachment to a milling-machine and is designed for cutting the teeth of elliptical gear-wheels, something that has not before been attempted. Although gears of this kind have marked advantages of their own they are not much used, since the usual methods of cutting produce results too inaccurate, while the really good elliptic gear is so costly as to prevent its use except in special instances. The basis of this machine is the method of dividing or spacing the elliptic outline. Heretofore it has been supposed that the elliptic gear had to be spaced off with a pair of dividers, because the ellipse cannot be divided by any known mathematical process. After long study and much labor Mr. Grant discovered a method of division which is mechanically perfect, although not mathematically exact; the error of the method for any case in actual use is much less than the errors of practice. The invention consists of apparatus, first, to hold the gear-blank by means of a shaft through its focus-hole and to accurately place that focus with respect to the center of the ellipse; second, to so space the rotary motion of the blank that the teeth cut in its edge shall follow the true elliptic outline, and, third, to so divide the rotary motion of the blank that the teeth cut in it shall be accurately spaced on its pitch-line. In the diagram, Fig. 1, *RR* and *TT* are two lines crossing each other at right angles at the center point *O*, and fixed upon a plane that revolves as a whole upon the plane of the drawing upon which the three points *A B C* are fixed in the same straight line. It is a well-known fact that the point *C* will trace out a true ellipse upon the moving plane if the two lines are compelled to move on the points *A B*. We quote from the patent specifications:

"It is a property of the ellipse, discovered by myself, that the line *A B C* extended will evenly divide both the ellipse and a circle, *I*, having the same center, *O*, and moving with the ellipse if its radius is equal to the sum of the radii of the ellipse. Therefore if a circle, *I*, accurately spaced, is attached to the moving plane, as shown, it will serve as an index to space the ellipse. This spacing is not mathematically exact, but its accuracy for cases in actual use is well within the requirements of practice. As an example, take an elliptic gear of eight diametral pitch, having radii of 5 and 4 inches and 72 teeth. An index circle of 9 inches radius will space this gear so accurately that the maximum error—the difference between the largest and smallest spaces—is less than $\frac{3}{16}$ inch. The lines *RR* and *TT* are preferably at right angles, and the pins *A B C* are preferably in line; but that arrangement is not essential. Lines at any angle and points in any relative position will produce the true ellipse, but the disposition chosen gives the advantages that the major and minor of the ellipse will coincide with the generating lines and that the major and minor radii will be equal respectively to the distances of the points *A* and *B* from the tracing point *C*. Any other disposition would trace an ellipse which could not be easily measured and placed."

The principles illustrated by the diagram are carried into practice by the apparatus shown by Figs. 2 and 3. The platen *D* is that of a common gear cutting or milling machine, or is a similar bed provided for the purpose, and is formed with a slot, *SS*. The cutter is adjustably fixed with respect to the platen so that it can be placed directly over the slot, and can be

moved vertically so that the center point of its tooth outline can be fed in the vertical cutter line *C C*. Two pins, *A* and *B*, are fixed in the slot at any distance apart in the line of the point *C* and at any desired distance from it. The head *H* lies upon and is rotated upon the platen, and on its under surface is formed with two slots, *M N*, at right angles to each other, at the point *O*, and fitting the two pins.

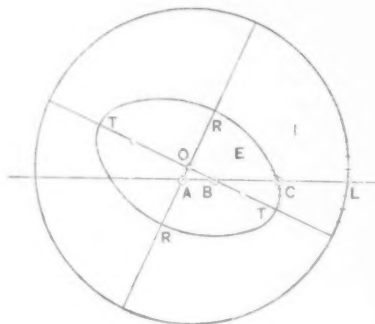


Fig. 1.

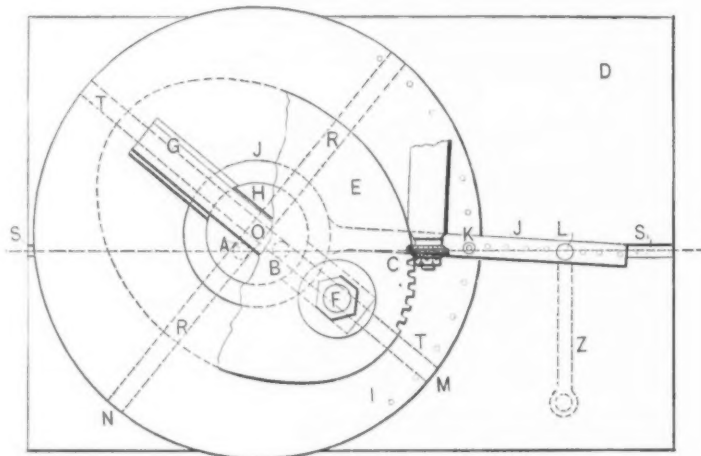


Fig. 2.

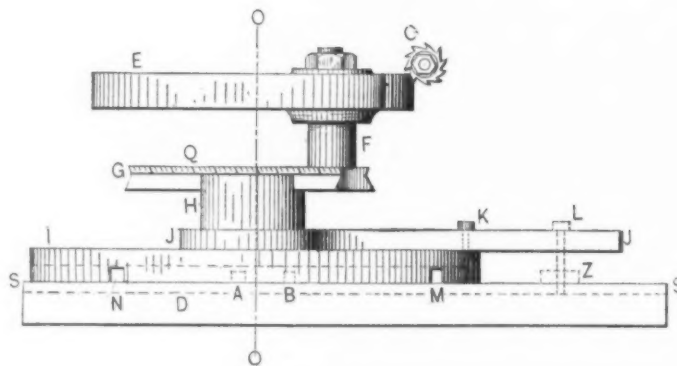


Fig. 3.

METHOD OF CUTTING ELLIPTICAL GEARS.

As the head is turned around the pins slide in the slots and so guide its motion that any fixed point, as *C*, will trace an ellipse which has the point *O* for its center and the distances *A C* and *B C* for its major and minor radii. The gear-blank *E* is held on the head with its center at the center line *O O* of the machine; but as an elliptic gear is always held, in use, by its focus-hole, a special device is used by which it can be readily mounted at its focus. The slide *G* slides in guides on the head parallel to the slot *M*, and the stud *F* is so placed on the slide that it will

always be over the center line of the slot and can be made to coincide with the common center *O*.

In mounting the gear-blank to be cut a shaft-hole is bored at its focus and it is fastened to the slide *G* upon the stud *F*. The slide is then placed, by means of the scale *Q*, so that the center of the stud is at the known focal distance of the ellipse from the center *O*. The major axis *TT* of the ellipse is placed parallel with the slot *M*, and it is then in position to be cut.

The mathematical requirement for correct spacing is that the radius of the index shall be equal to the sum of the radii of the ellipse; but as that would require a separate index for each separate-sized gear to be cut the following equivalent device is used instead: The index-plate *I*, fixed to and forming part of the head *H*, is of any convenient size, and is provided with the usual rows of index-holes or the equivalent worm or gear. The arm *J* swings freely on the head *H* about the center line *O O*, and carries two pins, *K* and *L*, adjustably fixed upon it. The stop-pin *K* can be fixed to act in any row of holes, and the index-pin *L*, which can be fixed

at any desired distance from the center *O*, projects downward and slides in the slot *SS*. As the head *H* is rotated it has a swinging motion on the platen, the center *O* having a motion in a circle having a center on the line *A B* midway between the pins *A* and *B*; but the pin *L* will slide in the slot *SS*, giving the index a practical working radius, *O L*, which is variable at will while it is divided at any convenient radius, *O K*.

The machine is operated in the following manner: The gear-blade *E*, of known radii, focal distance and number of teeth,

is placed upon the head H in the manner described. The pins A and B are fixed at a distance apart equal to the difference of the radii of the ellipse, and the cutter is placed at a distance, B C, equal to the minor radius. The first tooth is then cut by feeding the cutter across the face of the blank. The index is then turned at the pin K through one tooth space and the second tooth is cut. Similarly all the teeth are cut, and in the same way the points of the teeth are trimmed to the proper length. The three parts of this machine are practically distinct and perform separate parts of the work, although they combine to produce a single result. The form of neither one is dependent on the form of either of the others. The sliding blank-holder and the index will work just as well with any description of elliptic head as with one having the system of slots and pins here adopted, and, similarly, the blank-holder and the elliptic head can be combined with an index that is irregularly spaced to produce the regular spacing of the gear-wheel.

The only requirement for the swinging motion of the pin L is that it shall swing practically in a straight line, and that is best produced by the slot S S, as shown; but if the pin is attached to a vibrating lever, Z, as shown by the dotted lines, it will act properly, as its motion out of the straight line would then be but little. The requirement as to the radius of the index need not be strictly adhered to, as it can be materially varied without materially affecting the accuracy of the spacing.

New Railroad Shops.

Some time ago the Long Island Railroad Company decided to remove their machine-shops from Hunter's Point to some spot more centrally located in regard to the requirements of the road. The new shops, which have been practically finished and will now be equipped with the necessary machinery, are located at Richmond Hill. The new buildings are substantial-looking structures of red brick, with granite foundations and trimmings. They consist of two large main structures, running north and south, respectively 547 x 85 feet and 420 x 100 feet; a blacksmith shop 100 x 60 feet; a boiler-house 35 x 45 feet; an engine-room 26 x 45 feet, and a store and pattern room, all separated from each other, and a chimney or smoke-stack between the boiler-house and blacksmith shop 125 feet high and 16 feet in diameter at the base.

While the new works will not be the largest in the country, they will be among the most complete in design and appointments. The total cost will be about \$175,000. The contract for building them was given to the Flynt Building and Construction Company, of Palmer, Mass. The architect was L. H. Gager, of Palmer, Mass., and the Long Island Railroad Company's chief engineer, Anthony Jones, had charge of the work. The immediate supervision, however, of the details in the construction of the new buildings and fitting them up was intrusted to Charles A. Thompson, master mechanic of the Long Island Railroad Company, and as he has been in the company's employ for nearly a quarter of a century, he knew exactly what was required. The following description of the new building was obtained from Mr. Thompson, by a reporter of the *Evening Post*, who visited the works and inspected them under his guidance: The big building on the east is divided into three, a paint-shop 239 feet long, containing 14 tracks running across the building, so that 14 cars can be worked upon at once; a car-building shop 214 feet long, with 13 tracks; and a mill-room 89 feet long, where the lumber will be planed and prepared.

These three shops are the full width of the building—namely, 85 feet. The building is 30 feet high inside to the center of the roof. The flooring consists of a combined Trinidad and Neufchatel asphalt pavement.

The machine-shop, 420 feet long by 60 feet wide, with an annex 40 feet wide running the entire length, in which is placed the various machinery, contains 16 tracks and pits, so that 16 locomotives can be worked upon at the same time. The building has a truss roof and is well lighted. It is fitted with two traveling cranes of a joint capacity of 50 tons, which combined can pick up an engine and transfer it easily over other engines in the building from one part of the shop to another. The flooring of the machine-shop consists of 6 inches of tar concrete, 3 inches of hemlock and 1 inch of maple flooring. There is a boiler-shop in the north end of the annex and three of the pits in the machine-shop are for boiler-making purposes. There will be two power-shafts running the entire length of the building, one to drive the machinery and the other to operate the traveling cranes. These cranes are building by the Morgan Engineering Company, of Alliance, Ohio.

The smiths' shop is perhaps the most interesting part of all the works. It will contain a large furnace, two big steam-hammers, each having a head weighing 1200 pounds, and 13 forges. The foundations for the steam-hammers are built of concrete and timber upon a natural gravel and sand formation. The timber consists of blocks of solid oak 10 feet long and 20 x 20 inches square, laid in crib fashion and blunt-bolted together. On top of all will be the anvils. The smiths' shop is very well lighted and ventilated with swinging windows, besides which there will be pipes over all the forges which will be connected with the outer flue of the large chimney-stack for the purpose of carrying off the smoke and heat.

The boiler-house is a very substantial building and contains three boilers of 75 horse-power each. They were built by the Bigelow Company, of New Haven, Conn. These boilers will supply heat as well as power for the shops. Adjoining the boiler-house on the one side is a large building for a coal-bin, and so fitted that the coal will drop into it from the top of it. On the other side of the boiler-house, and really part of it, is a large, roomy building for an electric-light plant. The shops will be lighted by electricity whenever it may be necessary to work at night or in the winter-time, when the days are short. In Long Island City work has always begun and ended with the sun.

There will be three large automatic engines, 225 horse-power each, to drive the machinery in the several shops—one in the machine-shop, one in the carpenters' shop and the third in the smiths' shop. They are from the works of the Westinghouse Engine Company, of Pittsburgh. The immense chimney which stands between the boiler-house and smiths' shop is a splendid piece of work. It is built on a solid granite foundation 10 feet deep. Near by the chimney are placed the closets, lavatories, &c., the vaults of which are connected with the chimney by a separate flue. The outer flue in the chimney is for the purpose of ventilating the smiths' shop and lavatories, &c., while the inner flue is for the boilers. On the top of the stack is a large iron cap. There is a stairway in the chimney from the bottom to the top.

Between the two main buildings will be an immense transfer-table 78 feet long, for the purpose of transferring engines and cars in and out of the shops. It will rest on eight tracks and is being made by the Yale & Towne Mfg. Co., of New Haven. A round-house is also to be built,

300 feet in diameter, to accommodate about 50 engines.

There are already sheds for 40 locomotives and 100 cars. The railroad company own 140 engines, 375 passenger and baggage cars and 1200 freight cars, so that there is always enough work for the 125 men employed at the works to keep the rolling-stock in good repair. Many miles of track are being laid to connect the various roads with the shops, which are accessible on all sides. Much of the machinery at present in use at Hunter's Point will be transferred to the new works, but a very large quantity of new and improved machinery is to be put in. It will be supplied by Manning, Maxwell & Moore, of No. 111 Liberty street. The railroad company do not build engines, although they may do so, but they make all their castings, except car-wheels, and employ men in every branch of trade connected with locomotive and car building. Drawings for the new buildings were made by one of the company's machinists. The machinery in the machine-shop includes among other things a large plane for planing cylinders, two large lathes for turning driving-wheels, two wheel-presses, a large slotting-machine, a radial mill, four drilling-machines, a dozen lathes of different sizes, a car-wheel boring-machine, brass turning-lathes and numerous other tools.

Industries, at the end of an article on the screw-rolling process of the American Screw Company, of Providence, R. I., prints the following statement showing the machines necessary for the production of 5000 gross of wood screws in ten hours:

1. By the cutting process:	Francs.
14 machines to form the head, at 3500 francs.....	49,000
125 machines to turn and form the slot, at 1500 francs.....	185,000
250 machines to form the screw-thread, at 1250 francs.....	312,500
Total.....	546,500
2. By the swaging and rolling process:	
30 machines to form the head, at 5000 francs.....	150,000
38 machines to form the screw-thread, at 1600 francs.....	60,800
Total.....	210,800
Difference, 335,700 francs, or 61 per cent.	
Number of pounds of material required to make	Pounds.
5000 gross by cutting method of steel wire.....	10,000
5000 gross by method of swaging and stamping.....	6,000
	4,000
Or a difference of 40 per cent.	
Values of the screws produced by the two methods:	Francs.
The process of swaging and rolling gives with No. 9 wire 5000 gross of screws, 1½ inches long, No. 13 wire gauge.....	70,711.30
The old process of cutting gives with No. 9 wire 5000 gross of screws, 1½ inches long, No. 9 wire gauge.....	44,402.40
	26,308.80

There is a difference, therefore, of 59 per cent.

At Pittsburgh last week Joseph Matthews entered suit against Park Brother & Co., Limited, of the Black Diamond Steel Works, to recover the sum of \$7000. Matthews alleges that he was hired during the strike at the Black Diamond Steel Works as roller in the 32-inch plate-mill at \$1.50 per ton. A contract was signed engaging him for two years, and guaranteeing him not less than \$3500 per year salary. He was employed in August, 1887, and discharged in February, 1888, without any cause or fault of his. At the time of his discharge he was earning, clear, from \$25 to \$30 per day. Since then he had been unable to get work elsewhere because he went into their employ pending a strike, and he now sues for two years' full wages.

The Girard Hydraulic Railway.

At the Paris Exposition the so-called slide or hydraulic railway has attracted much attention, since its execution on a more extended scale may result in greatly modifying the present methods of railway construction and propulsion. From *Industries*, of London, we take the following description of this road, which is the best and most complete we have yet seen:

The railway is the invention of the well-known hydraulic engineer, M. Girard, who, as early as 1852, endeavored to replace the ordinary steam traction on railways by hydraulic propulsion, and in 1854 sought to diminish the resistance to the movement of the wagons by removing the wheels and causing them to slide on broad rails. In order to test the invention M. Girard demanded, and at the end of 1869 obtained, a concession for a short line from Paris to Argenteuil, starting in front of the Palais de l'Industrie, passing by Le Champ de Courses de Longchamps and crossing the Seine at Suresnes. Unfortunately the war of 1870-71 intervened, during which the works were destroyed and M. Girard was killed. After his death the invention was neglected for some years. A short time ago, however, one of his former colleagues, M. Barre, purchased the plans and drawings of M. Girard from his family, and having developed the invention and taken out new patents, formed a company to work them.

The invention may be divided into two parts, which are distinct, the first relating to the mode of supporting the carriages and the second to their propulsion. Each carriage is carried by four or six shoes, shown in Figs. 3, 4 and 5, and these shoes slide on a broad, flat rail, 8 inches or 10 inches wide. The rail and shoe are shown in section in Fig. 1. The rail is bolted to longitudinal wooden sleepers, and the shoe is held on the rail by four pieces of metal, A, two on each side, which project slightly below the top of the rail. The bottom of the shoe which is in contact with the rail is grooved or channeled, so as to hold the water and keep a film between each shoe and the rail. The carriage is supported by vertical rods, which fit one into each shoe, a hole being formed for that purpose, and the point of support being very low and quite close to the rail, great stability is insured. It is proposed to make the rail of the form shown in Fig. 2 in future, as this will avoid the plates A, and the flanges B will help to keep the water on the rail. Figs. 3, 4 and 5 show the shoe in detail. Fig. 3 gives a longitudinal section, Fig. 4 is a plan and Fig. 5 is a plan of the shoe inverted, showing the grooves in its face. Fig. 3 shows the hollow shoe, into which water at a pressure of 10 atmospheres is forced by a pipe from a tank on the tender. The water enters by the pipe C and fills the whole of the chamber D. The water attempts to escape, and in so doing lifts the shoe slightly, thus filling the first groove of the chamber. The pressure again lifts the shoe and the second chamber is filled; and so on until ultimately the water escapes at the ends E and sides F. Thus a film of water is kept between the shoe and the rail, and on this film the carriage is said to float. The water runs away into the channels H H (Fig. 6) and is collected to be used over again. Fig. 3 also shows the means of supporting the carriage on the shoe by means of K, the point of support being very low. The system of grooves on the lower face of the shoe is shown in Fig. 5. So much for the means by which wheels are dispensed with and the carriage enabled to slide along the line.

The next point is the method of propulsion. Figs. 7 and 8 give an elevation

and plan of one of the experimental carriages. Along the under side of each of the carriages a straight turbine, L L, extends the whole length, and water at high pressure impinges on the blades of this turbine from a jet, M, and by this means the carriage is moved along. A parabolic guide, which can be moved in and out of

above the other, placed with their concave sides in opposite directions, so that one set is used for propelling in one direction and the other in the opposite direction. In Fig. 6 it is seen that the jet M for one direction is just high enough to act against the blades Q, while the other jet is higher and acts on the blades P for propulsion in

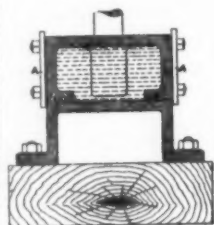


Fig. 1.

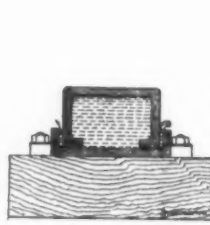


Fig. 2.

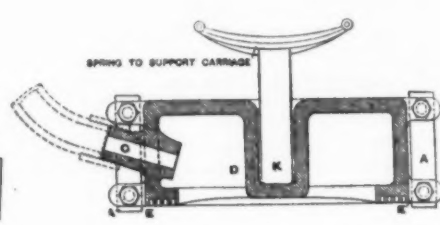


Fig. 3.

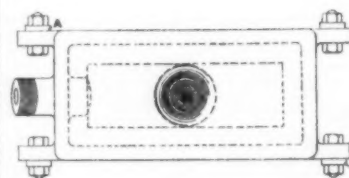


Fig. 4.

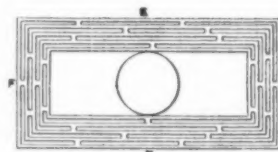


Fig. 5.

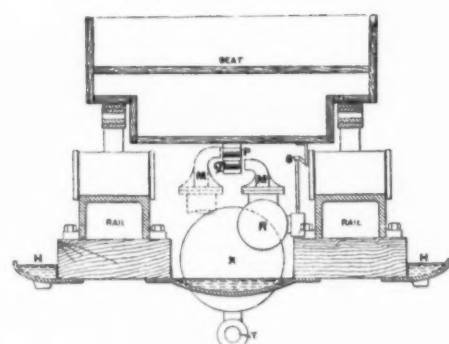


Fig. 6.

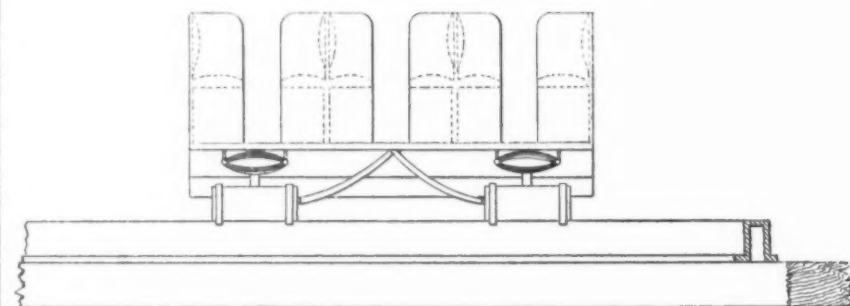


Fig. 7.

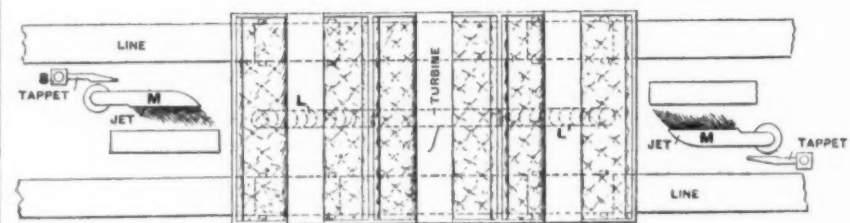


Fig. 8.

THE HYDRAULIC RAILWAY AT THE PARIS EXPOSITION.

gear by the lever, is placed under the tender, and this on passing strikes the tappet S and opens the valve which discharges the water from the jet M, and this process is repeated every few yards along the whole line. The jets M must be placed at such a distance apart that at least one will be able to operate on the shortest train that can be used. In this turbine there are two sets of blades, one

the opposite direction. The valves R, which are opened by the tappet S, are of peculiar construction. Reservoirs (Fig. 6) holding water at high pressure must be placed at intervals, and the pipe T carrying high-pressure water must run the whole length of the line. Fig. 6 shows a cross-section of the rail and carriage and gives a good idea of the general arrangements.

The absence of wheels and of greasing and lubricating arrangements will alone effect a very great saving, as we are informed that on the Lyons Railway, which is 800 km. long, the cost of oil and grease exceeds £400,000 per annum. As Sir Edward Watkin recently explained, all the great railway companies have long tried to find a substitute for wheels, and this railway appears to offer a solution of that problem. M. Barre thinks that a speed of 200 km. (or 120 miles) per hour may be easily and safely attained. Of course as there is no heavy locomotive, and as the traction does not depend upon pressure on the rail, the road may be made comparatively light. The force required to move a wagon along the road is very small, M. Barre stating, as the result of his experiments, that an effort amounting to less than $\frac{1}{2}$ kg. is sufficient to move 1 ton when suspended on a film of water with his improved shoes. It is recommended that the stations be placed at the summit of a double incline, so that on going up one side of the incline the motion of the train may be arrested and on starting it may be assisted. No brakes are required, as the friction of the shoe against the rail, when the water under pressure is not being forced through, is found to be quite sufficient to bring the train to a standstill in a very short distance. The same water is run into troughs by the side of the line and can be used over and over again indefinitely; and in the case of long journeys the water required for the tender could be taken up while the train is running. The principal advantages claimed for the railway are: The absence of vibration and of side-rolling motion; the pleasure of traveling is comparable to that of sleighing over a surface of ice; there is no noise, and what is important in town railways, no smoke; no dust is caused by the motion of the train during the journey; it is not easy for the carriages to be thrown from the rails, since anybody getting on the rail is easily thrown off by the shoe and will not be liable to get underneath, as is the case with wheels; the train can be stopped almost instantly, very smoothly and without shock; very high speeds can be attained; with water at a pressure of 10 kg. a speed of 140 km. per hour can be attained; great facility in climbing up inclines and turning round the curves; as fixed engines are employed to obtain the pressure, there is great economy in the use of coal and construction of boilers, and there is a total absence of the expense of lubrication. It is, however, difficult to see how the railway is to work during a long and severe frost. The *Chemin de Fer Glissant* at the exposition is more than 500 feet in length, the rails being placed $4\frac{1}{2}$ feet apart. To illustrate the possibilities of the system the track is what we might term undulating, the steepest grade being 4 per cent., while one terminus is about 5 feet higher than the other.

A report received at the Bureau of Steam Engineering, Navy Department, from one of the inspectors on the new cruiser *Charleston*, built by the Union Iron Works, San Francisco, says that the horse-power developed by the ship in her recent official run will probably not be reported above 6,700 by the trial board in their official report. The vessel worked beautifully, every part of the machinery working in perfect order, without the least heating. She was run six hours instead of four, as stipulated in the contract, and she worked better during the last two hours than she did at first, thus proving her excellent staying qualities. Her speed during the six hours averaged about 18 $\frac{1}{2}$ knots. If this be confirmed by the official report, the ship will have failed to make her contract requirement of 7000 horse-power by 300, which will subject her builder to a

penalty of \$30,000. The boiler performance in this ship has been in excess of that of the *Yorktown* in proportion. The contractors did everything in their power to meet the requirements of the contract, importing hand-picked Welsh coal for use on the trial. The vessel was built on the plans of the Nammakan, English designed, which had about 24 trials before she was accepted. It is believed that the contractors will go to Congress for relief from the penalties, on the ground that the plans were defective.

The National Forge and Iron Company.

The rolling-mill of the National Forge and Iron Company, at East Chicago, Ind., is now about completed and will very shortly be in operation. The property of the company comprises about 12 acres, giving them ample room for expansion should it become necessary to enlarge the works. The location is an excellent one, the works enjoying a water frontage on the canal extending from the Calumet River to Lake Michigan, and also having superior railroad facilities. A siding in their yard connects with the Chicago and Calumet Terminal Railway Company, through which the entire system of railroads centering in Chicago is reached. The arrangement of the yard tracks has been designed to secure the economical handling of both raw material and finished product. The receiving tracks are on the north side of the mill and shipping tracks on the south side. In the process of manufacture everything thus goes forward to completion and shipment.

The works are divided into two departments—namely, the rolling-mill and the forge. The rolling-mill occupies the main building, which is 360 x 140 feet, with a wing 100 x 50 feet, having additional projections for housing shears to cut scrap and for storing the different kinds of materials used. There are three trains of rolls, one an 18-inch train for bars, a 10-inch for guide iron, and an 18-inch train for muck-bar. Four double-heating furnaces are provided for the finishing-rolls and four double (equal to eight single) puddling-furnaces supply the muck mill. These rolls are driven by a 40 x 48 engine and a 20 x 30 engine built by the Boss Foundry and Machine Company, of Fort Wayne, Ind. There are seven shears, designed especially for the work required and all driven by separate engines. The largest shear is capable of cutting 5-inch rounds cold, and is said to be the largest in the West. It is to be used for cutting scrap, such as car-axles, &c. The large number of shears is occasioned by the intended use of scrap as the chief raw material, but provision is made for puddling if it proves desirable to use pig-iron. The furnaces are designed for the use of fuel-oil on an original plan, the intention being to use no coal. Steam is supplied by nine boilers, all attached to the furnaces to utilize waste heat.

The rolls and shears were built by the Lloyd-Booth Company, of Youngstown, Ohio, and are all of the latest pattern. The makers have taken special pains to furnish the most improved and effective designs, with the object of securing the largest product at the least expense. Every part of the machinery, including the engines, is about double the strength or power usually allowed, so as to be available for either steel or iron, and also to guard as much as possible against breakdowns with their great loss of time. The mill is further equipped with a blacksmith shop, a roll-turning shop and a machine-shop, so that necessary repairs can be made expeditiously.

The forge building is 175 x 65 feet and is being equipped with upright hammers of the latest and most improved pat-

terns furnished by the Morgan Engineering Company, of Alliance, Ohio, and Bement, Miles & Co., of Philadelphia. The forge is designed specially for forging car-axles and shafting, but it will also be adapted to general blacksmithing work. The forge will be put in operation about four weeks after the mill starts.

The buildings are of frame, but they are covered with corrugated iron and are regarded as fire-proof. Yet they have been made as light and airy as possible for the character of the works.

The general design of the plant has been to provide for the manufacture of railway work in all its branches, both car and road equipments. A line of merchant bar-iron will also be made. The capacity of the mill is rated at 100 tons of finished product per day. This would appear to be a very large capacity for the size of the plant, but the builders are confident that it can be accomplished. They claim that its construction embodies the most advanced ideas in this line and that it will be a model bar mill. It will be lighted by electricity, the plant for which will shortly be installed. The officers of the company are as follows: Marks Swarts, president; F. B. Felt, vice-president and general manager; Seymour Swarts, secretary and treasurer. A neat two-story frame office has been erected for their occupancy, the first floor to be used for clerical and business purposes and the second floor for drafting.

A Uniform Bankrupt Law.

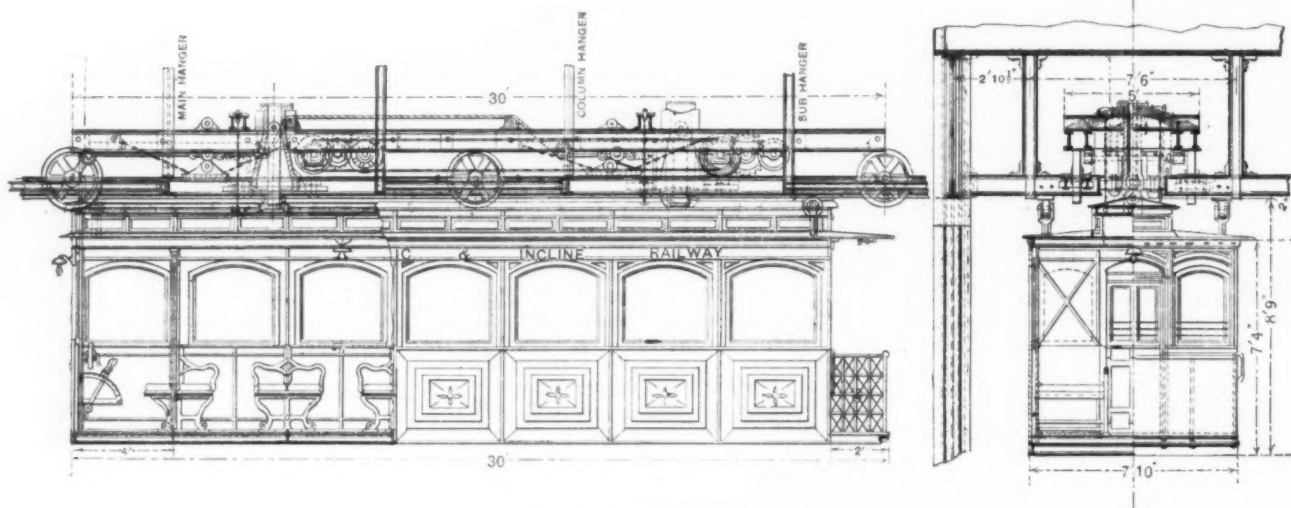
The adjourned meeting of the national convention of representatives of commercial bodies for formulating an equitable uniform bankrupt law was held at Minneapolis, Minn., on the 3d and 4th insts. The delegates present represented New York, Boston, Philadelphia, Chicago, St. Louis and other leading commercial centers. J. L. Torrey, of St. Louis, presided, and F. J. McMaster, of the same city, was secretary. Judge Torrey, the chairman, is the author of the proposed bankruptcy bill which bears his name and which has been favored by the convention. A few of the more important points of the bill are as follows: Jurisdiction in bankruptcy proceedings is conferred upon the district courts. The appointment of a referee is provided for at a fixed salary of \$3000 per annum. The trustee is to be nominated by the creditors, although in minor cases the referee could do the work. The United States District Attorney must examine every bankrupt at the first meeting of the creditors, and also at the last meeting before the creditor is discharged. It is that official's duty to lay the matter before the grand jury in case of fraud. Persons who are guilty of commercial dishonor and who have defaulted on commercial paper or open account for 60 days may be forced into bankruptcy. Fraudulent preferences are forbidden and valid liens created in good faith protected. The bankrupt is allowed exemptions according to the State in which he lives. If he can show a faultless record and clean hands he will be immediately discharged, no matter how small the dividend he may pay. The assets will be divided as soon as possible. The question of a trustee receiving pay after having been removed for cause should be left to the jurisdiction of the court. If an assignment was proved to be fraudulent the bankrupt should not be discharged by the court. Several unimportant amendments were made and a committee of five were appointed to wait on President Harrison and ask that he recommend Congress in his next annual message to pass a bill of similar import to the bill as amended by the convention. The convention then adjourned subject to the call of the Executive Committee.

The Gates Electric Railway.

The system of rapid transit here illustrated contains several novel features, both in the track and manner of suspending the car and in the method of applying the propelling power. The car hangs from springs whose ends rest upon and are secured to two pairs of I-beams, which form what is in reality a traveling-track, each pair of beams constituting one rail. Car-

shown in the drawing forcing a current of air over the exposed part of the disks. Since the quantity of heat to be withdrawn from the exhaust steam is approximately equal to that needed to evaporate an equal quantity of water, the number of the revolving disks and their surface must be so chosen that they evaporate 1 pound of water for every pound of steam condensed. The volume of air blown into the apparatus must be so great that even if it enter

denser, in a report before the Lenne section of the Society of German Engineers, states that with 85 per cent. of a vacuum the temperature of the cooling water was 50° Celsius, while the condensed water had a temperature of 56° Celsius. For 80 per cent. vacuum the figures were 55° and 60° respectively. We understand that the builders guarantee that the consumption of water for condensing will be less than pound for pound of steam condensed.



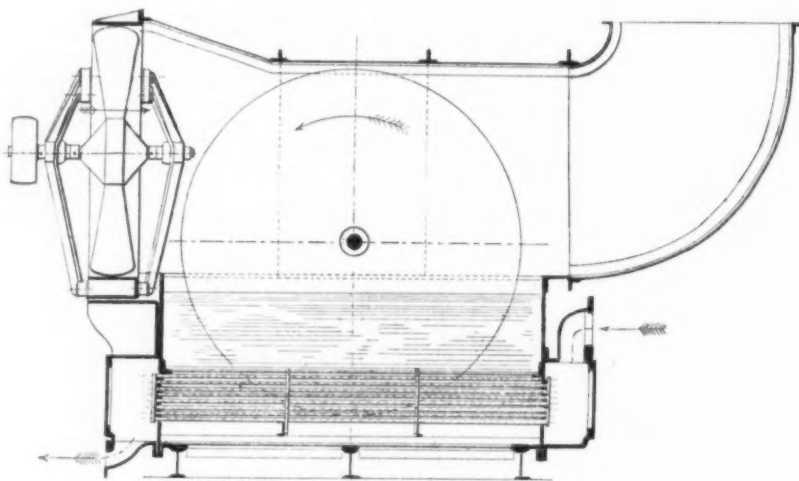
THE GATES ELECTRIC ELEVATED RAILWAY.

ried by the elevated structure and located at certain intervals apart—15 feet—are pairs of rollers, arranged one under each track. The axles of these rollers are free to roll upon short tracks built upon the cross-beams of the structure. Each short track is slightly inclined, so that after the rollers have been carried to the upper end of the incline by the passage of the car they will return by gravity to the lower end and be in position to support the following car. Each car—it is not the intention to combine several cars to form a train—will be propelled by an electric motor so arranged as to drive wheels resting upon a supplementary track carried by the structure. For high speeds the driving-wheel will be of comparatively large size, while for ascending steep grades a smaller wheel, driven by the same motor, will be utilized. These wheels are so mounted that only one can be brought into gear with the motor at the same time. To stop the car a shoe, which rests normally just above the supplementary track, may be brought into contact with the track, while the weight of the car will act as a brake. This system is the invention of A. D. Gates, of Cleveland, Ohio.

it saturated with moisture, its capacity to absorb additional quantities of water through heating in the apparatus is large enough to evaporate the necessary quantity of water.

The apparatus, therefore, works as follows: The exhaust steam entering the condensing-chamber and tubes condenses, imparting its heat to the cooling water. The disks rotating in the water agitate the latter and aid in its work. The disks

At the Peine works a billet to an engine with 1000 mm. diameter of cylinder, 1250 mm. stroke, 70 revolutions and 6 atmospheres steam pressure is provided with a condenser having 107 sq. m. condensing-surface. Another condenser, 148 sq. m. surface, takes care of the engines for three trains: one with 850 mm. diameter, 1200 mm. stroke and 90 revolutions; one with 700 mm. diameter, 1000 mm. stroke and 110 to



THE THEISEN CONDENSER.

The Theisen Condenser.

During the visit of the American engineers to the splendid new furnace plant of the Rheinische Stahlwerke, near Ruhrort, their attention was particularly called to the Theisen condenser, which is being introduced in Germany and is thought highly of by German engineers. At a meeting of the Society of German Iron Masters at Cologne Franz Mrazek, of Pilsen, described the apparatus, the report being published in a recent issue of *Stahl und Eisen*. The exhaust steam from the engine enters as indicated by the arrow on the right of the accompanying illustration, and flowing through a series of brass tubes parts with its heat to the water in which they are immersed. Between the groups of tubes a number of galvanized disks rotate, being moistened by dipping into the water. The water thus adhering to them is evaporated, a fan

are heated and, covered as they are when emerging from the water with a thin film of it, they are exposed to the current of air delivered from the fan, so that the evaporation of the water is assisted vigorously, cooling the disks. The latter, dipping into the water again, carry down its temperature. It is possible in this manner to keep the cooling water down to a certain temperature and to produce steadily a vacuum equivalent to that temperature.

Herr A. Bechem, of Hagen, who has had experience with the Theisen con-

120 revolutions, and an engine with 750 mm. diameter, 1000 mm. stroke and 75 revolutions.

At the Rheinische Stahlwerke, Ruhrort, there are two compound horizontal engines 900 mm. diameter of high-pressure cylinder, 1300 mm. low-pressure cylinder, 1500 mm. stroke, 40 revolutions, 1900 mm. blowing-cylinder, 6 atmospheres boiler-pressure, 0.4 to 0.8 atmospheres blast pressure. Two condensers, with each 75 sq. m. condensing surface, do the work well.

THE WEEK.

The aggregate receipts of grain at Buffalo by lake since the opening of navigation are 47,000,000 bushels, an increase of about 5,000,000 bushels as compared with the same time last year. Wheat receipts fell off more than 7,000,000 bushels, but corn increased 10,000,000 bushels. Of flour the receipts are 2,280,000 barrels, which is a falling off.

The board appointed to make a test of the gun-boat Petrel have made a report to the Navy Department. The vessel did not develop the amount of horse-power required by the contract. The deficit will cost the contractors \$5521. The report says the workmanship reflects credit on the contractors and that the vessel is strong enough to convey the armor and equipment intended for her.

The opening of the new port of entry at South Brunswick, Ga., on the completion of the so-called Terminal Railroad, will give to the Southwestern States a direct route between San Diego, on the Pacific Coast, and the Atlantic.

The manufacture of heavy cottons is being attended with such success in Brazil that foreign products are likely to be displaced in that market.

The Pittsburgh Chamber of Commerce commits itself decidedly in favor of action on the part of Congress looking to the up-building of the American merchant marine. A resolution passed by that body recommends that manufacturers co-operate with the managers of the International Maritime Exposition, to be held at Boston, November 4, by contributing freely of such of their products as enter into the construction and navigation of sea-going vessels for that occasion.

The Hatches Iron Wagon Factory, of Macon, is boycotted by the Farmers' Alliance for using jute bagging. A quantity of this article was purchased by the farmers and burned. The determination is to force a general use of cotton bagging as against the jute trust.

A Scranton dispatch says a fire is raging in No. 2 colliery of the Delaware and Hudson Canal Company, at Olyphant, where several acres of anthracite coal are ablaze nearly 200 feet below the surface. It will be necessary to cut through 125 feet of coal before the streams of water that are to be carried through pipes can be directed effectively against the fire.

The work of constructing the Highland suspension bridge across the Hudson River at St. Anthony's Nose is in progress, commencing with the anchor-pits and abutments.

It is said that the disappointing performances of the Teutonic are due to defective stoke-hole arrangements, the firemen and engineers finding that the heat is almost unbearable. One account says: "On an average the revolutions made by the propellers on the outward voyage fell 15 per minute below the average counted upon, simply because the firemen and engineers from the above cause were unable to keep steadily at work, while the homeward trip is said to have been made with at least a dozen furnaces banked up and out of use from the same reason." The difficulty will be remedied.

The "Vanderbilt corporations" are severely denounced by Mayor Grant for their alleged parsimony and grasping disposition. The New York and Harlem Railroad Company decline to pave between their tracks up-town, whereupon the Mayor says: "They have in this surface railroad an immensely-valuable franchise

for which they pay nothing. They monopolize one of the most valuable sections of the city for their depot and railroad yard and have gobbled up a big slice of the North River water-front and monopolized the streets opened for the benefit of the public. Altogether the Vanderbilts have more privileges and pay less for them than any other corporation in the city."

England is fostering her trade with Buenos Ayres. Consul Jenner, of the British Legation there, says that in order to develop trade to its fullest extent more English houses, both wholesale and retail, should be established in the republic.

Estimates of the expenditures of the New York City departments for the coming year show an increase in all the principal items. The Fire Department calls for \$2,360,000, heading all the list, an increase of \$234,000.

The City Council of Chicago seriously propose to prohibit the use of bituminous coal in that city, fearing that the murky atmosphere which it causes will prevent the selection of Chicago as a proper location for the world's fair. A dispatch says: "Such a measure would utterly destroy the Illinois soft-coal markets and render almost valueless the broad coal-fields of the State and increase the fuel expenses of Chicago railways, steam-boats and factories \$5,000,000 or \$10,000,000. Besides, it would promptly be pronounced illegal by the Supreme Court."

The American Dredging Company are removing their machinery from the Panama Canal in Nicaragua. Contrary to the experience of many others, that company found gold in the big ditch as well as dirt and have gone in pursuit of more.

Dick & Meyer's sugar refinery, in Brooklyn, was destroyed by fire on Saturday, together with 20,000 barrels of sugar, valued at \$500,000. The plant included about 30 engines and boilers of various descriptions, and the firm estimate their loss at about \$1,000,000. The fire originated in an explosion in the grinding-room.

Chinamen enter the port of New York from Cuba with passports from the Spanish authorities recognizing them as naturalized citizens of the Spanish Government, but it does not appear that their number is considerable.

The "mechanics' bell" so well known to ship-joiners on the East Side of New York for nearly 60 years was last Saturday night rung for the first time from its new position on Fourth street, near the river.

By the death of Mrs. Ellen M. Gifford, of New Haven, more than \$600,000 will come into the possession of the city, of Yale University and of other institutions.

The Cabinet at Washington is reported to have decided unanimously against an extra session of Congress.

A dispatch from Duluth, Minn., says the Canadian Pacific Railroad have let a contract for 700 miles of new road. They will build this fall from Regina to Prince Albert, and next spring the line will be extended from Prince Albert westward, through Edmonton and Yellowhead Pass, in the Rocky Mountains, to Vancouver. Thirty thousand tons of new rails are now on their way from England for the new line.

Advices from Montreal state that T. G. Shaughnessy, assistant president of the Canadian Pacific Railroad, leaves for England in a few days to contract for three steamers of 5600 tons, to steam 18 knots, for the Pacific mail service to China and Japan. They are to be of the same model and design as the North German Lloyd

steamer Lahn, to cost a million apiece and to be delivered at Vancouver in 18 months. President Van Horn says that nothing short of universal disaster will prevent the company from earning \$20,000,000 next year and \$8,000,000 net, or 6 per cent. on the capital. The government guarantee of 3 per cent. ends in 1893.

A dispatch from the City of Mexico says: "The *Mexican Economist*, the best authority of Mexican finance and statistics, gives some facts and figures regarding the condition of trade between Mexico and the United States which are regarded as rather startling and which differ materially from those given out at Washington." It says that in the fiscal year 1887-88 the value of the exports from the United States to Mexico was in American coin \$19,264,673 or in Mexican money \$25,686,237, and that the value of exports from Mexico to the United States during the same period was \$31,059,226. These figures are regarded as the most accurate that have ever been obtained and show that exports from the United States to Mexico are several millions larger than heretofore stated by either Mexican or United States authority.

General Légitime, of Hayti, charges that Hippolyte's victory is due to the intervention of United States officials, particularly Minister Thompson.

The Chicago Horseshoe Company.

The Chicago Horseshoe Company, whose works are at East Chicago, Ind., are putting in a Bookwalter or Robert steel plant, to furnish the steel from which they propose to make their horseshoes. They will start with one converter, which is already in place. It has a capacity of 2 tons per heat, but will blow 1-ton charges for the present. The blowing-engine, cranes, casting-pit and cupolas are completed, and as soon as some minor parts of the machinery are received, which will probably be in a couple of weeks, the works will be started. The cupolas are of the Whiting pattern. The main building of these works is 200 x 160 feet, and it has a wing 100 x 64 feet. The steel plant is in the wing, while the main building is used for the rolling-mill, horseshoe machines and machine-shop. The rolling-mill has a 12-inch train of rolls, driven by an engine built by the Taylor Mfg. Company, of Chambersburg, Pa. The rolls are so arranged that the horseshoe-bar is led from the final pass between two large vertical rolls. In the periphery of the upper roll are arranged at proper distances a series of teeth and projecting ridges which punch the bar for nail-holes and also crease it. The bar then passes directly to the horseshoe machine to be shaped. On entering the machine the bar is pressed into the requisite curved form by a number of direct-acting plungers operated by cams or eccentrics, and at the same time the heels are formed by another set of plungers. Saws placed below cut the shoes apart. This machine is so constructed that more shapers and saws can be added to operate on longer bars whenever an enlargement is deemed necessary, thus greatly adding to the capacity of the machine. The equipment of the works also includes a number of separate punching and shaping machines for turning out the Goodenough shoe which the company propose to manufacture. These works are well located to receive raw material and ship their finished product, having connection in their own yard by means of the Chicago and Calumet Terminal Railway with the entire railroad system of Chicago. The company's main office is in the Rookery Building, Chicago.

MANUFACTURING.

Iron and Steel.

The works of the Tubular Steel Wheel Company, at Bissell, near Pittsburgh, have commenced operations, giving employment to 22 men.

The Sharon Steel Casting Company, of Sharon, Pa., are enlarging their works by the erection of a machine-shop 60 x 80 feet and two and a half stories in height. The works of the firm are being operated to their utmost capacity, and have enough orders on hand to keep them busy for some months to come.

No. 5 puddle mill, recently erected by the National Rolling Mill Company, at McKeesport, Pa., was put into operation during the present week. The new mill has 12 double puddling furnaces, hammer, and all equipments necessary to its successful operation.

Thomas Veners, manager of the plant of the Keystone Rolling Mill Company, Limited, at Pittsburgh, has introduced a device which consists of cold-air chambers that can be attached to the rear of any kind of furnace or boiler stack, and dispenses with the water-neck in puddling furnaces. The cold air coming in contact with the hot air chills the entire stack and also the mill to such a degree that common red brick can be used in furnace necks and in lining stacks.

The stockholders of the Lebanon Iron Company, of Lebanon, Pa., have decided to build an addition to their plant, which, when completed, will double the present capacity.

The blast-furnace of the Cameron Iron and Coal Company, at Emporium, Pa., is at present turning out about 110 tons of foundry iron per day. At present the firm are engaged in the erection of a foundry and machine-shop, and have also under consideration the question of erecting an additional blast-furnace, to be located adjacent to their present stack.

The wages of the furnace employees of the Stewart Iron Company, Limited, at Sharon, Pa., have been advanced from 10 to 15 cents per day. The firm granted the advance voluntarily, and it went into effect on the 1st inst. It is probable that other furnace operators in the Shenango Valley will take similar action.

The Swindell & Smythe Company, of Pittsburgh, Pa., have just closed a contract with the Lynne Iron Company, of Lynne, Pa., for the erection of a regenerative gas plant.

It is stated on good authority that arrangements have been completed at Springfield, Ohio, whereby a rolling-mill plant, using natural gas for fuel, is to be established at that place at once. It is expected to give employment to about 125 hands.

Notices have been posted in the three puddling-mills of the Pottstown Iron Company, at Pottstown, Pa., of an increase in the wages of puddlers of from \$3.25 to \$3.50 per ton. The advance will go into effect on Monday, the 16th inst. A year ago nearly all the rolling-mills in the Schuylkill Valley were paying \$3 per ton for puddling, but since that time wages have been increased until a majority of the mills are now paying from \$3.40 to \$3.85 to puddlers, and all employees in proportion.

Reuben Miller, William Metcalf, Charles Parkin, Charles Metcalf and Walter F. Parkin will on September 26 apply to the Governor for a charter for the Crescent Steel Company, of Pittsburgh.

The East Chicago Foundry Company, East Chicago, Ind., are rapidly getting their works into shape. The main build-

ing is now under roof and a large 50-ton crane is already in position. The company will make a specialty of rolls for rolling-mills and castings of a similar character.

Jerome L. Boyer and P. R. Stetson appraised the real estate and personal property of the Keystone Furnace Company as follows: Furnace, machinery fixtures, tools, cars, &c., \$150,000; Fleetwood ore wharf, \$500; personalty, consisting of office fixtures, horses, wagons, pig-iron, ore, &c., \$12,848.20; book accounts, \$1291.78; total personalty, \$14,139.98. Total appraisement, \$164,639.98.

The strike at the works of the Allegheny Bessemer Steel Company, at Duquesne, Pa., mention of which was made in our issue of last week, has been settled to the satisfaction of both sides. The plant is now being operated to its full capacity.

The entire plant of the Bellaire Nail Works, at Bellaire, Ohio, is being operated to its utmost capacity. Their contract for natural gas having expired, the entire works are now run with coal mined from the company's banks, and the establishment of an electric plant for lighting the works is now being considered.

The property and franchise of the Crozer Steel and Iron Company, in Virginia, were sold at auction at Roanoke on the 3d inst., to settle the estate of the late Col. D. F. Hamilton and discharge a deed of trust. Samuel A. Crozer, of Chester, Pa., became the purchaser for \$300,000 cash.

The Clinton Rolling Mill, at Pittsburgh, formerly owned and operated by Graff, Bennett & Co., is now being operated by the Clinton Iron and Steel Company, composed of J. W. Friend, F. N. Hoffstat, W. H. Bailey and others. The new firm have signed the Amalgamated scale, which action was necessitated by the change in the management.

J. P. Witherow, engineer and contractor, of Pittsburgh, has closed a contract with the Sharon Iron Company, of Sharon, Pa., for the erection of three Whitwell hot-blast stoves, each 18 x 60 feet, with draft stacks, each 6 x 150 feet. These are to be completed within three months.

The Fowler Steel Car Wheel Company, of Chicago, have completed the erection of their Bookwalter or Robert steel plant, making the first blow on the 5th inst. The new machinery worked well and the start was very satisfactory, the quality of the steel produced being very fine. The product of the steel plant will be used in casting wheel-blanks to be rolled into solid car-wheels.

The blast-furnace of the Norton Iron Works, at Ashland, Ky., is out of blast at present, being relined and repaired. It will be blown in again as soon as repairs are completed. At a recent meeting of the Board of Directors of this company John Russell and John Means resigned and the following officers were elected: Charles H. Greene, formerly president of the Standard Nail and Iron Company, of Bridgeport, Ohio, president; J. K. Pollock, secretary, and John Russell, treasurer.

The Chicago Forge and Bolt Company, of Chicago, have acquired possession of the property of the Straight Fiber Iron Company, whose rolling-mill was burned down some time since, and are rebuilding the plant. They will roll bar-iron for their own use in manufacturing bridges, bolts, nuts, &c.

The C. A. Treat Car Wheel Works, at East Chicago, Ind., have been completed and are now ready to engage in the manufacture of cast-iron car-wheels as soon as the condition of that branch of business will warrant it. The present outlook is

quite favorable to an early termination of the depression which has so long ruled in the car-building line, when the manufacture of car-wheels may again become profitable. The buildings of the company are substantially built of brick and arranged with a view to secure economy in handling materials and the product in its various stages of completion.

The National Pulley Covering Company of Baltimore, have recently received their eleventh order for covering from Henry McShane & Co., iron and brass founders, of that city, and their fourth from B. Gill & Son, of Trenton, manufacturers of threshing-machines. They report that their August business came from 20 different States and Canada, this success being attributed by them to the increase in the speed of machinery from the use of this covering.

An error crept into the report naming the officers of the Tonawanda Iron and Steel Company, Tonawanda, N. Y. W. A. Rogers is president, Archer Brown vice-president, J. S. Willett secretary and treasurer, and F. B. Baird general manager.

P. H. Corr, of Boston, has bought the entire plant of the Old Colony Iron Works, at East Taunton, mill, machinery, water privilege, about 50 tenements and 160 acres of land. He is negotiating with out-of-town parties for the establishment of a special class of work in the rolling-mill and has other plans for the balance of the property which as yet have not matured.

The roof of the casting-house at the Stewart Iron Company's works, at Sharon, Pa., fell in on Friday last, injuring four men, one of them fatally.

The Anniston Pipe Works, at Anniston, Ala., have begun operations.

W. W. Kurtz & Sons, Valley Iron Works, Coatesville, Pa., manufacturers of boiler, bridge, ship and tank plates, have recently put their large mill in operation, so that now they have two running with 96-inch and one with 110-inch rolls. A third train with 72-inch rolls will soon be in operation. They contemplate also making improvements in their plant by adding new buildings, putting in additional cranes, &c.

The Wilmot & Hobbs Mfg. Company, of Bridgeport, Conn., have started double turn in order to be able to fill orders promptly. They propose to carry a stock of 500 tons of partly-prepared cold rolled strip steel.

The large fly-wheel of the engine in the rail-mill of the Pennsylvania Steel Works, at Steelton, burst on Monday morning. One of the flying pieces severed the 4-inch steam feed-pipe, which soon filled the mill with steam. In a few minutes the steam was shut off at the boilers, when it was discovered that the engine was considerably damaged. It was an 1100 horse-power upright engine of the Pusey-Jones, Wilmington, Del., make.

The Hercules Iron Works Company, of St. Louis, have secured the manufacturing plant formerly occupied by the Woods Engine and Machine Company, at 2707 North Broadway, and will in a few days begin the manufacture of street-car and wagon brakes and machinery specialties. The company are a new firm, with F. L. Carnahan, president; G. A. Slattery, secretary; Wm. Vogel, treasurer, and John W. Martin, manager.

Machinery.

A correspondent in the Providence Journal writes: "In the extension of the Diamond Machine Works, on Aborn street, Providence, R. I., there is to be seen a line of shafting which in hangers, couplings and

shafts approaches the ideal of perfection. The hangers are graceful in their lines—oval-shaped and hollow, combining strength with stiffness. The bearings are of the type known as ball-and-socket and self-oiling. The coupling is very novel in its construction, easily removed and replaced, while its grip upon the shaft is so powerful (effected by four taper screws operating on internal clamps) that in repeated trials shafts have been twisted off by torsional strain even when the couplings were used without keys. This shafting is from the Cresson Shafting Works, Philadelphia. They have had the honor of always supplying and meeting the exacting requirements of the Brown & Sharpe Company for their original works and recent extensions."

The Pittsburgh Locomotive Works, of Allegheny City, Pa., are erecting a building 50 x 100 feet and three stories in height to be used for office purposes. It will have a pressed-brick front and will cost \$10,000.

The Oil City Boiler Works, of Oil City, Pa., are to add a foundry to their already extensive works, and in six weeks will be prepared to supply machine castings of various kinds. The firm recently shipped a large engine to Alaska.

Pedrick & Ayer, of Philadelphia, manufacturers of universal milling-machines, cylinder boring and facing machines and special tools for railway repair-shops, are now located in their new building at 1001 and 1003 Hamilton street and which extends through to Buttonwood street. The new quarters were made necessary by the fact that the business had outgrown the old home and the firm had to decide whether or not to refuse orders or to obtain more commodious shops. The new building is the result.

The Oregon Pacific Railroad Company's foundry at Yaquina, Ore., was destroyed by fire.

The Glenmore Iron Foundry, of Philadelphia, are manufacturing the Glenmore patent grate surface for boilers, brick-kilns, &c. It is applicable to either locomotives or stationary boilers and has undergone practical tests for two years. The manufacturers claim that its construction makes it exceedingly strong and durable and prevents warping. The grate is in use on the Pennsylvania Railroad, Kings County Elevated Railroad and numerous steam-boat lines.

Nicholson & Waterman, of Providence, R. I., in a circular describing their horizontal boring-machine, which may be used as a drilling, milling and turning machine, make the following remarks about special machines: "The practical advantages which one machine possesses over another for a given operation are generally due to superior arrangements for saving of time in handling and setting. It usually follows that less skill is required of the operator. While in some cases strength of parts and driving mechanism do make a considerable difference, the lack of power is so readily discovered and so easily remedied that it assumes a secondary importance when considered together with arrangement and adaptation. In every machine-shop doing any variety of work a great amount of miscellaneous boring has to be done, not considering such pieces as pump and engine cylinders. Many of these pieces have several holes in them and often located where accurate measurements are imperative. Where sufficient quantity of work exists to warrant it nothing is so economical as a special tool designed for the special piece. In many cases the uncertainty of the future, the small number of any one individual piece and often great variety of work destroy the economy of special machines."

Their boring-machine was designed in order to meet these last objections.

Hughes Steam Pump Company, manufacturers of all kinds of steam-pumps, 114 Viaduct, Cleveland, have just completed two large duplex pumps, one compound, one high-pressure, for water-works in Natchez, Miss., and will soon begin work on water-works for Albion and Wyandotte, Mich., which will require compound high-pressure condensing pumps. In addition to this they have just completed a large elevator pump for the county courthouse, which is one of the finest in the city.

The Wilmot & Hobbs Mfg. Company, of Bridgeport, Conn., have recently been putting in a quantity of exceedingly heavy drawing machinery capable of drawing smooth cold-rolled steel, brass or copper shells of various diameters up to 8 inches by 6 inches or 8 inches deep. One of the peculiarities of this machinery is that the drawing-punch has a quick return stroke, giving great power when drawing and losing little time between operations. They are doing a great variety of this work and have been running till 9 p.m. on some special press-work, besides running their rolling-mill department overtime.

G. V. Cresson, of Philadelphia, Pa., manufacturer of shafting, offers for sale the buildings at Eighteenth and Hamilton streets occupied by him before the new works were built.

Hardware.

The Douglass Axe Manufacturing Company, of Boston, with factory at Douglass, Mass., have placed their affairs in the hands of M. Storey, owing to the discovery that the treasurer and manager, Denison Dana, is missing, and that the accounts of the company are in a bad condition. Mr. Storey said the liabilities of the company were chiefly to banks.

Referring to Buffalo's manufacture of braces, and especially to the American Bit Brace Company and their exhibit at the Paris Exposition, we find the following in one of our exchanges:

About 35 years ago the parent factory on this continent was started in Massachusetts, and from this establishment, about 15 years ago, an inventor came to Buffalo and commenced business, from which latter industry sprang three additional factories, one of which is now defunct, the remaining three being in active operation. One of these branches has so increased its capacity that, although but two years old, it is the largest in the world and is so enterprising that it sent a fine exhibit to the Paris Exposition, and as a result has received several commendatory letters from visitors to the World's Fair of 1889.

The Youngstown Stamping Company, of Youngstown, Ohio, have been operating during the past year the Lane & Wordenworth Glass Company's Works at the above-named place. They have lately purchased the property, consisting of glass-works and $3\frac{1}{2}$ acres of ground. On this they will erect the necessary buildings for their tin department. The main work-room will be 350 feet long and 56 feet wide.

Miscellaneous.

A charter was filed at the Recorder's office in Pittsburgh last week for the Pennsylvania and Lake Erie Dock Company. The intention of the company is to construct and maintain wharves in the Grand River, Lake County, Ohio, for public and private use. The capital stock is \$275,000, divided into 2750 shares at \$100 per share. The directors are H. W. Oliver, H. C. Frick, H. C. Fownes, John W. Chalfant, Horace Crosby, John Z. Speer and C. D. Fraser.

The supply of natural gas at Wheeling, W. Va., is reported to be insufficient, and as a consequence some of the manufacturers have been compelled to go back

to the use of coal. For several weeks past the tube department and the plate mill of the Riverside Iron Works have been operated with coal. The Bellaire Nail Works are using coal in all departments, and the La Belle Iron Works are contemplating the same step. In view of these facts it is probable that a thorough test will soon be made in that vicinity for gas.

Shultz Belting Company, St. Louis, Mo., have completed the new addition to their works and have started up the machinery. They report a large increase in trade, and find that notwithstanding the improved facilities they are taxed to keep up with orders.

J. L. Laughlin, superintendent of the plow works of B. F. Avery & Sons, at Louisville, Ky., visited Chicago last week. He reports his branch of trade in very satisfactory condition, with very bright prospects for the future. Preparations for increased business are the order of the day, and his concern are now putting in a pair of double engines needed to make the plant more efficient. One of the engines is to be used for electric lighting and the other for operating the wood working department. Each is of 60 horse-power. About 40 machines of different kinds have recently been added to their equipment, increasing the capacity of the works from 30 to 35 per cent.

The contract for the metal-work to complete the Philadelphia City Hall tower has been awarded to the Tacony Iron and Metal Company, of that city. It will take about four years to complete the work, and the contract is based upon the average cost of materials and labor with 15 per cent. added. It is estimated that the work will cost \$325,000.

The William Graver Tank Works have now been established at East Chicago, Ind., for a little over a year. They make a specialty of tank and sheet-iron work, manufacturing tanks for linseed, cottonseed, illuminating and fusel oils, and enjoying a trade which extends throughout the country, but is, of course, heaviest in the West and Northwest. The works comprise two buildings, one of which is used for a machine-shop and the other for erecting. In this establishment all punching is done by the rack system instead of centering, thus making this part of the work much more rapid as well as strictly accurate. One machine operating on this system will punch 60 holes a minute and all will be properly spaced. Five punching-machines and three shears are used. All riveting is done by hand. About 60 men are employed at present, and the works are very full of orders, the only difficulty now experienced being the failure of mills to ship plates as promptly as they contracted to do. The main office of these works is in the Rookery Building, Chicago.

Broderick & Bascom Rope Company, St. Louis, Mo., manufacturers of wire rope, cables, &c., inform us their August business shows a large increase over the corresponding month of last year. During the past week they have shipped a number of orders for wire cable, aggregating nearly 200,000 pounds, and have enough orders booked to keep them well employed during the balance of the month.

The contract for the iron roof over the new buildings of the Providence Gas Company, at Providence, R. I., has been awarded to the Berlin Iron Bridge Company, of East Berlin, Conn., their plan being considered the best, although their price was somewhat higher than the price of local parties. The same company are also erecting the iron building for the new tube-mill at Torrington, Conn. The contract for the new jail at Windsor, Vt., has been awarded to the same company.

The Iron Age

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The Collapse of the Copper Combination.

The great effort to gather all the leading copper producers and the principal holders of that article into one combination has collapsed completely. It may be of interest to review the principal points which were the basis of that agreement and which were virtually accepted by all but a few interests. Practically it was to embrace all who had dealings in one form or another with the *Sécretan* gamble. The warrant-holders in Europe and the mines who had *société* contracts, with the exception of the American mines, agreed upon the following basis: The warrant-holders restrict their sales to 9000 tons every three months, or 36,000 tons annually, paying the mines one-third of the excess in price realized above the sum for which the copper was pledged. In consideration thereof, the mines release the *société* and restrict their production to 80 per cent. of their 1888 output. Before the contract could be signed it was necessary to raise 4,000,000 francs to discharge the claims of three companies which had not received payment for copper delivered to the *Société des Métaux* at the end of 1888. The liquidators of the *Comptoir d'Escompte* looked forward to trouble in the liquidation growing out of contracts for large sums guaranteed by the *comptoir* with the *Cobar* Mine in Australia, and with *Jardine Matheson & Co.* for mines in Japan. These claims were not comprised in the general arrangement with the mines. Added to these difficulties was the fact that one important producer, understood to be the *Cape Copper Company*, could not be induced to fall into line.

The American mines were not included in the arrangement referred to, a special agreement being made with them. They were to restrict their exports to 32,000 tons annually, the details of participating therein to be left to themselves. The warrant-holders in their turn pledged themselves not to market any of their holdings in North America, the American miners to give a release for all claims upon the *comptoir* or others who were liable under contracts made under the initiative of the *Société des Métaux*.

In their turn the American companies organized among themselves, practically turning over the control of the business to three men, *Livermore, Stanton and Keyser*. They were to fix prices and regulate the output, if necessary, the sales to be made by two firms. All the leading companies assented to the plan, except the interests with which a leading firm of dealers are identified, a firm who have become a power in the copper market during the past few years. The mines are the *Santa Fé* and the *Arizona Copper Company*. Besides this, the interests of *W. A. Clark*, with mines in *Butte, Montana*, and in *Arizona*, had not finally assented. The

firm alluded to were not consulted during the negotiations, and personal opposition to them is said to have been a factor in the situation.

However, matters were progressing quite favorably for those who were hoping to carry through a pool, when it was suddenly discovered last week that one of the warrant-holders—the representatives of the *Rothschilds* being freely named—had sold considerable copper under the price temporarily agreed upon pending the completion of negotiations. Opinions differ concerning the amount thus disposed of and the time over which this selling movement has been going on. The quantity is variously stated at 2,000,000 and 5,000,000 pounds. The market has now dropped below 11 cents for lake, which, it is said, is bid for export.

It is suggested that the selling of the great banking concern in question was done because the conviction may have been reached that there was no hope of carrying through the combination as planned. The American market, being relatively higher, was the most convenient to unload in at a better price than could be realized elsewhere. Some in the copper trade look upon the movement as a deep-laid scheme to break the market in order to buy lake copper cheaply, the *Rothschilds* now being the greatest single copper-manufacturing concern in the world.

To the trade at large the sudden turn in the situation brings up new problems. Consumers will not be in a hurry to buy when they know that there is a good deal of personal spite and animosity and very little faith in one another among copper producers and holders. For a time, at least, there will be war, and we may see copper soon where it naturally belongs without any artificial props to sustain it. It looks as though the opportunities to buy copper cheaply are going to be frequent for some time to come. Ten-cent lake copper does not look very far off, in spite of the fact that admittedly consumption is enormous. It may be expected, however, that for some time to come the casting and the electrolytic brands will take the lead. The quantity of that kind of copper produced is relatively in greater excess than that of lake.

Rapid-Transit Plans.

We describe and illustrate elsewhere three systems of rapid transit, each of which possesses interesting and decidedly novel characteristics. That some of the features introduced will tend to modify present methods in certain cases is more than probable. In addition to the above there are at least two other systems the plans of which will repay attention.

We may place the five methods under the following heads: 1, That utilizing atmospheric pressure; 2, that depending upon water; 3, the steam bicycle; 4, that employing electricity in new forms of apparatus, and, 5, that employing electricity as a motive power and a track of rollers. The first four of these methods have been tested on quite an extended scale, and the results reached are said to have equaled the anticipation of those most deeply interested. The fifth plan will, we believe, soon be subjected to a practical demonstration.

The method employing atmospheric pressure is similar in principle to that so successfully used in the carrying of messages by the telegraphic companies, though there are notable differences in construction. To transport the messages from one point to another, they are inclosed in a cylinder which fits easily in a tube from which the air has been exhausted. The pressure of the atmosphere forces the cylinder, which in reality acts as a piston, rapidly through the tube to its destination. It is evident that much power, comparatively speaking, is lost in overcoming the friction between the cylinder and tube. The method now brought forward substitutes a hollow sphere for the cylinder and a rolling instead of a sliding motion is given to the carrier. The resistance presented is thus reduced to a minimum, while the carrying capacity is increased. This system will transport a ton of freight at a speed not possible with a cylinder having the same load. There are also provided automatic switches and valves. Stoppage is accomplished by the sphere entering what we may term a "dead end," in which the air is compressed to form a cushion which stops the sphere without shock.

The next method is that known as the slide or hydraulic railway, which forms one of the attractions at the *Paris Exposition*. Unlike the above method, it is applicable to both passenger and freight service. Two plates separated by a film of liquid may be easily moved in a direction parallel with their planes, but cannot be withdrawn without the exercise of considerable force. The shoes upon which the car is supported and the wide, flat rails upon which they slide are held apart by a thin layer or film of water forced between them. The car is then absolutely free to slide along the rail, the power required being that necessary to overcome inertia. The propelling-power consists of jets of water forced from stationary nozzles against a long turbine or screw, extending along the center of the bottom of the car. The flow of water is controlled automatically by the passage of the car. The turbine and the water-jets work together as pairs, the action of one pair driving the car in one direction, while the action of the other reverses the motion. We see no reason why this system should not find adoption in many instances where great speed, easy motion and freedom from gases and smoke are essential. By substituting a line of small buckets and smaller jets under greater pressure for the turbine arrangement now used better results from an economical point would undoubtedly be obtained.

The steam bicycle resembles closely the "wheeled steed" we have adopted so largely. The single large driving-wheel is actuated by a double engine, with a cylinder on each side. Smaller wheels run upon the same rail. Overhead are guide-rails to preserve the upright position. This system has been thoroughly worked out and will be shortly tested with a full-sized machine and track. It has been urged against the bicycle-engine that it will prove a difficult matter to keep it on the track. At high speed and on a straight track the whole tendency of the engine is to preserve its motion in a straight line, and sudden sidewise movements—unless obstructions are met—would

be impossible. This tendency would also offset the alternating motion of the cranks. There appears to be no great obstacle so far as the construction of either the engine or track is concerned. In the fourth method an electric motor provides the propelling-power. An original construction, and one admirably adapted to the work, is introduced in the motor. The axle upon which the two driving-wheels are mounted forms the shaft of the armature, the field of the motor being so swung that the motion of the car on its springs in no way affects the adjustment between the armature and field. The electric current passes from the generating-station to the motor and returns along a rail so formed as to permit of this. The cars composing a train are joined by a telescopic joint, and all wheels and trucks are within the body of the car, so as to offer but little resistance to the air. By mounting the armature on the axle between the wheels no power is lost by reason of gearing, and a greater speed is made possible than by the usual methods. This is shown by the tests which have been made on a track some two miles long, when a speed of over two miles per minute was made. A longer track and larger cars are now being built in order to fully ascertain all the advantages of the system.

In the fifth case the track consists of rollers, the axles of which run in inclined ways. The car is supported upon iron beams which run upon the rollers. An electric motor, operating upon a supplementary track of the usual form, furnishes the propelling power. The car is suspended from the springs and frame, which travel along the track and which take the place of the ordinary trucks. As stated, the car runs, in reality, upon rollers arranged to move along inclined ways. The object sought by giving the ways a slight incline is that the rollers may return to their first or normal position at the lower end of the incline after they have been run to the top of the incline by the passage of a car. It is apparent that the difference in level of the upper and lower ends of the incline need only be slight in order to attain this object. But an interesting problem here presents itself. We will suppose that the periphery of the roller and its axle have such a relation to each other and to the supporting beam traveling upon them as to require ways 10 feet in length. We will also suppose that the grade or inclination is 1 inch in the full length of 10 feet. Let it be assumed that the car moves at the rate of one mile per minute: what would be the effect of a car traveling at the rate of one mile a minute over a road having an offset of 1 inch every few feet? What would be the effect of a change of grade of $\frac{1}{2}$ inch at every 20 or 30 feet at the same speed?

In the several attempts to solve the rapid-transit problem which we have so briefly outlined are many new and well-defined points. A rather peculiar feature is that no two of the four—air, water, steam and electricity—can be combined without radically changing the construction. The systems using air and water are absolutely independent of each other and of the other two. The application of the electric motor to the steam bicycle would not be advantageous. It is, therefore, evident that a close study of these systems, founded upon different principles, will

amply repay those interested in the question of rapid transit of passengers and freight for long and short distances.

The Monetary Crisis at Buenos Ayres.

The gold premium has been cutting such capers at Buenos Ayres this summer that the monetary and with it the financial status of the country begins to attract a good deal of attention abroad. There is, in the first place, the Argentine national indebtedness, which amounted to \$150,724,300 on January 1, 1887. Apart therefrom the provinces and municipalities have floated loans over loans in Europe, swelling the total to £62,777,745 on January 1, 1888, without speaking of the many railroad, harbor improvements and other loans. Last year the gold premium averaged 48 per cent., gradually rising to 59 $\frac{1}{2}$ in May, 69 $\frac{1}{2}$ in June, 75 in July, 81 $\frac{1}{2}$ in August and recoiling to 75 in the same month, the excitement abating somewhat. The fact is that the Minister of Finance has shown little ability in grappling with this monetary question. The cabinet has therefore been remodeled, and Señor Pacheco has been reinstated in the Treasury Department. But it is doubtful whether he will be able to check the depreciation of paper money at a moment when one of the leading industries of the country—the cattle industry—is suffering.

Various measures had been taken under authority of Congress by the former Secretary of the Treasury with a view of counteracting the rising tendency of the gold premium. It was resolved to create a national guarantee fund of \$50,000,000 gold and silver for the conversion of the national bank notes. Another project had for its object the conversion of hypothecary bonds, called "cédulas," from a paper currency into gold bonds. Furthermore, in order to hold out an inducement to the people at large to deposit funds with the official provincial banks instead of with private banking concerns, it is proposed to lay a 2 per cent. annual tax on moneys deposited with the latter. Nay, it has even been proposed to impose a tax on gold leaving the country. But all these measures—whether taken or projected—appear insufficient to conjure the crisis in the face of the enormous issue of hypothecary bonds, or "cédulas," that has been indulged in by the various banks. Thus at Buenos Ayres alone \$75,419,200 paper cédulas were issued in 1886; in 1887, \$127,412,192 paper and \$15,834,000 gold cédulas; in 1888, \$160,061,600 paper and \$43,000,000 gold, and at present the La Plata Mortgage Bank contemplates setting afloat \$50,000,000 additional. In less than three years \$430,000,000 cédulas have thus been put in circulation, being at the rate of about \$140 *per capita* of the population, represented by mortgages on improved and unimproved real estate. The Buenos Ayres *Standard* remarked in July last, ere the gold premium temporarily jumped to 81 $\frac{1}{2}$: "Nobody in or out of power dreams of retrenchment, and the result is an unbridled speculation that laughs at all ministerial subterfuges to avoid the dilemma of meeting the situation in earnest by stringent legislation with regard to issues of greenbacks and mortgage bonds. In this helter skelter race of new issues and new companies the

gold premium is shooting ahead at a tremendous pace, and the very worst feature of the situation is that there are no symptoms of any sensible slackening in the speed of this advance. Under such circumstances, though the Argentine Republic appears to be on the crest of a tidal wave of prosperity, distrust is spreading in the commercial body and nobody believes in any steady or permanent decline in gold or appreciation of paper." A vast real-estate speculation has been set on foot at Buenos Ayres by projecting the erection of a wall 6 km. in length from the northern extreme of the intended harbor extension to the mouth of the Maldonado Creek, from which a gain of 515 hectares of city lots would be obtained. A company has been formed which will carry out the purchase of the land and lay out the squares and streets at a cost of \$44,000,000, so that the square vara would cost the company \$16.66. Some of the \$8,000,000 shares are to be preliminarily issued at once, of which \$5,000,000 are assumed by the promoters of the scheme and \$3,000,000 offered the general public for subscription. This is only one of the many speculative schemes cropping up continually. Under authority of Congress, the Government is lavish in granting a guarantee of interest on new ocean steamship lines and other undertakings. Thus quite recently a guarantee of 5 per cent. for ten years was conceded to capital employed in the business of exporting fresh and preserved beef. It is stated that several establishments are preparing to take advantage of the guarantee provided by the Government and are going into the business on a large scale, with special steamers fitted up for the traffic and warehouses in England and France. It is not believed, however, that the law will in the least hurt American beef-shippers; it can, indeed, not do much harm until new methods are adopted by the Argentines for the preparation of beef for exportation. Stall-fed cattle are quite unknown in the country, and all bullocks for the market are taken directly off the grass, the meat, of course, being soft. Argentines, it is thought, will not cut much of a figure until they learn that dry food is absolutely necessary in order to prepare fresh meat for very distant foreign markets.

Speculation in real estate, in particular, at Buenos Ayres, Rosario and in inland towns is stimulated by the large numbers of immigrants pouring into the country. During the first six months 420 steamers brought 13,555 cabin passengers and 126,223 immigrants—together, 139,778 newcomers, of whom 45 per cent. were Spaniards, 27 per cent. Italians and 14 per cent. Frenchmen. It is estimated that before the end of the year 370,000 immigrants will be landed. Last year, from January 1 to July 1, only 72,304 persons landed. The greater number start for the colonies in the interior, being *bona-fide* agricultural settlers and a positive gain to the republic. But a good many remain in Buenos Ayres, Rosario and other cities, where they have to be sheltered. Building consequently flourishes, and from the United States alone there were shipped to the Argentine Republic during the last fiscal year 118,332,000 feet of lumber, worth \$1,921,488, as compared with 82,875,000 feet, worth \$1,313,801, the previous year. To judge from past experience

n other countries, our own included, it is not to be supposed that matters can proceed at this rate of expansion without a check for an indefinite time. Still, the crash may be staved off for some time longer, especially if no serious civil commotions should arise; for it should not be lost sight of that the Argentine Republic cannot, like Chili, be called exempt from revolutions. As Americans have but comparatively little money invested in that country and hold few of its securities, financial panic would not affect the interests of American financiers and merchants, the latter having no outstandings there. On the European exchanges it would be most severely felt; hence the premonitory sign of a rising gold premium causes some uneasiness there.

The fall exposition season has now opened, and reports come from every section of the country of more ambitious enterprises in this direction than any previous year has witnessed, with the mere exception of the few international expositions which have been held here. The enterprising managers of these undertakings have endeavored in many instances to lift them above the plane of purely local affairs, and have been successful in a great degree in making them representative of the progress attained in all important branches of industry in great sections of the country. It is evident from what has been accomplished in this direction that public interest in industrial expositions is growing instead of diminishing. While it is true that advantage is taken of these displays by active business men who see in them excellent opportunities for advertising their goods and wares, yet it must be conceded that they are of general benefit in numerous ways. The natural resources and advantages of particular States and localities are set forth in a manner calculated to be very effective, and besides, there are but few expositions in which mechanical processes do not form a sufficiently prominent feature for educational purposes. They thus have a stimulating effect on our industrial activities which extends far beyond the mere individual benefits arising to those who regard them solely in the light of opportunities for advertising.

Announcement of higher railroad freight rates on the whole range of iron and steel, crude and finished, are following one another in rapid succession. The railroad managers have evidently been keenly alive to their opportunities in sharing in the benefits accruing to the iron trade through the upward tendency of the last few weeks. In fact, the advances in some lines in leading markets have been largely due to the greater cost in laying down the goods. The iron trade will certainly not be adverse to being a contributor to the growing prosperity of its greatest customer, but it will certainly not be placed willingly in the position of paying for sacrifices and losses made in the carriage of other staples. A good many large corporations have been doing some very unreasonable cutting, and it can only redound to the benefit of the iron and steel trade when more reasonable rates cause net earnings to swell. But there will be some vigorous protesting if it should become clear that iron manufact-

urers and consumers have been singled out to furnish the sinews of war in grain, flour, cattle or other rates.

The Blast-Furnaces on September 1.

Principally through the blowing out of a number of large coke furnaces for repairs, whose work is not counter-balanced by the resumption of a number of smaller stacks, the capacity running on September 1 was not equal to that of the beginning of the previous month. It may be stated, too, that in many cases the August product did not come up to the average because quite a number of plants were adversely influenced by the scarcity of coke in the early part of August. Since the 1st of this month, however, quite a number of plants have re-entered the list of active furnaces and the make now, as we approach the middle of the month, is certainly larger than our figures indicate for the opening of September. The condition of all the furnaces in the country on September 1, as compared with the preceding three months, was as follows:

	In blast.	Capacity per week.	Out of blast.	Capacity per week.
Sept. 1.....	294	144,088	255	57,421
Aug. 1.....	286	145,890	201	68,485
July 1.....	285	141,419	239	66,307
June 1.....	286	137,119	259	73,856

In detail the status of the anthracite furnaces was as follows:

Anthracite Furnaces September 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	33	11	3,911	12	3,841
New Jersey.....	14	4	1,798	10	3,604
Spiegel.....	3	2	128	1	93
Pennsylvania:					
Lehigh Valley....	46	28	10,383	18	6,143
Spiegel.....	1	1	50	0	0
Schuylkill Valley..	32	15	5,295	17	4,239
U. S. Susquehanna Valley.....	17	8	2,980	9	1,373
Lebanon Valley....	16	15	7,232	1	208
L. S. Susquehanna Valley.....	21	9	4,220	12	3,100
Totals.....	173	93	35,997	80	22,610

For the past 13 months our records show the following:

	Furnaces in blast.	Capacity per week.
September 1.....	93	35,997
August 1.....	88	34,377
July 1.....	89	34,142
June 1.....	91	34,386
May 1.....	95	35,315
April 1.....	102	37,977
March 1.....	103	37,937
February 1.....	107	39,187
January 1, 1889.....	107	38,726
December 1, 1888.....	90	34,870
November 1.....	95	35,645
October 1.....	95	33,728
September 1.....	92	33,541

As expected, there has been an increase in the capacity of the anthracite furnaces in blast, the additional production coming chiefly from the Lehigh, Schuylkill and Upper Susquehanna valleys. New York and New Jersey report no changes. In the Schuylkill Mount Laurel, which was banked till the 16th ult., is at work, the two Reading furnaces are again producing and Topton is ready. One of the Pioneer furnaces will blow in within a month. Another one is to be dismantled, to be replaced by a new furnace next year. In the Lehigh Valley Crane started its fourth furnace on the 25th ult. and the Thomas Iron Company blew in their second Lock Ridge. In the Upper Susquehanna region the Lackawanna Coal and Iron Company have all of their five furnaces turning out pig-iron, while Marshall was added to the active list on the 24th ult. Paxton No. 1,

in the Lower Susquehanna, started on the 3d inst. The Lebanon Valley is running nearly full, its product being a little over 32,000 tons for the month of August.

The status of the coke furnaces was as follows:

Coke Furnaces September 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	4	2	1,552	2	2,100
Pennsylvania:					
Pittsburgh district.....	20	19	22,780	1	1,404
Spiegel.....	1	1	658	0	0
Shenango Valley....	19	15	10,580	4	2,845
Junata and Conemaugh valleys.	17	9	3,960	8	2,380
Spiegel.....	1	1	600	0	0
Youghi. Valley....	5	4	1,661	1	730
Miscellaneous.....	4	3	1,920	1	590
Maryland.....	1	0	0	1	179
West Virginia.....	6	2	1,393	4	1,488
Ohio:					
Mahoning Valley..	14	9	6,773	5	3,015
Central and Northern.	18	13	8,565	5	2,935
Hocking Valley....	14	4	1,529	10	3,103
Hanging Rock.....	13	7	1,489	6	970
Indiana.....	2	0	0	2	389
Illinois.....	12	8	9,340	4	2,850
Spiegel.....	1	1	935	0	0
Wisconsin.....	4	1	870	3	1,370
Missouri.....	6	2	971	4	2,218
Colorado.....	2	0	0	2	940
The South:					
Virginia.....	12	9	4,243	3	1,250
Kentucky.....	4	2	505	2	630
Alabama.....	27	21	12,440	6	2,178
Tennessee.....	11	7	3,379	4	2,280
Georgia.....	2	1	609	1	310
Totals.....	230	141	96,744	79	36,164

As compared with the 12 previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
September 1.....	137	99,720
August 1.....	137	96,548
July 1.....	136	91,771
June 1.....	135	91,771
May 1.....	147	98,399
April 1.....	151	100,080
March 1.....	150	100,757
February 1.....	150	98,518
January 1, 1889.....	157	103,736
December 1, 1888.....	151	101,748
November 1.....	146	94,695
October 1.....	137	85,461
September 1.....	133	81,082

New York has had added to its active furnaces the Tonawanda, formerly the Niagara Furnace. In Pennsylvania the Pittsburgh district has all its furnaces in blast with the exception of Furnace F, of Carnegie Brothers & Co., which is being relined. In the Shenango Valley Ella was at work during the greater part of August, Sharon came in on the 31st ult., but on the other hand, one Raney & Berger furnace blew out, and Rosena lost 11 days. In the Junata and Conemaugh district production is temporarily lessened by the blowing out of one of the Johnstown stacks of the Cambria Iron Company. In the Youghiogheny Valley the loss of considerable time in August by the Charlotte and Fairchance furnaces reduced the product of the month to 4504 tons, when under ordinary conditions it is about 7500 tons. Among the furnaces grouped as miscellaneous current capacity has been lowered by the blowing out on August 3 of Centre Furnace.

In Maryland Catoctin is not likely to resume before next month. One of the new furnaces of the Pennsylvania Steel Company may soon blow in, however. In West Virginia the status of the plants remains the same. In the Mahoning Valley of Ohio September will witness a notable increase in the output, Himrod, Falcon and May having started since the first of the month, while the second Hubbard is to follow soon. One Cherry Valley and one Seneca by their re-

sumption added to the current capacity, both of them being grouped among the plants of Central and Northern Ohio.

In the South, Virginia, Kentucky and Georgia show no change, nor are any changes announced, except that Gem, in Virginia, is to blow in during the second half of the current month. In Alabama one of the Eureka plant entered the month idle, Gadsden and North Alabama were not quite ready, the entire Ensley plant of the Tennessee Coal, Iron and Railroad Company was resuming and Woodward had only one furnace producing. Four Whitwell stoves have been added to the equipment of No. 2, which has probably blown in before our report reaches our readers. The probabilities point to a considerable increase in the current make of Alabama in the near future. In Tennessee Citico is out for repairs, which it is expected will be completed early in October. South Pittsburg has two stacks at work, against only one in the beginning of August.

The charcoal furnaces made the following exhibit at the beginning of the month:

Charcoal Furnaces September 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	14	7	610	7	480
New York.....	10	8	108	2	736
Pennsylvania.....	23	22	330	1	749
Maryland.....	8	8	325	0	340
Virginia.....	23	4	360	19	686
West Virginia.....	13	7	435	6	165
Ohio.....	13	10	187	3	291
Kentucky.....	10	0	70	10	0
North Carolina.....	5	1,237	3	304	114
Tennessee.....	0	0	2,058	1	280
Georgia.....	10	9	4,065	13	3,540
Alabama.....	25	12	682	1	210
Michigan.....	3	1	441	5	1,478
Missouri.....	1	1	173	0	0
Wisconsin.....	1	1	173	0	0
Texas.....	1	0	0	1	120
California.....	1	1	175	0	0
Wash. Ter.....	1	1	181	0	0
Oregon.....	1	1	181	0	0
Totals.....	156	60	11,327	96	8,651

In the following table is presented the record of the active charcoal furnaces for the past 13 months:

	Furnaces in blast.	Capacity per week.
September 1.....	60	11,327
August 1.....	61	11,902
July 1.....	60	10,727
June 1.....	60	10,962
May 1.....	54	10,629
April 1.....	53	10,173
March 1.....	55	11,081
Feb. 1.....	62	11,219
Jan. 1.....	67	11,946
Dec. 1.....	71	12,286
Nov. 1.....	73	12,724
Oct. 1.....	71	11,619
Sept. 1.....	67	11,243

The furnace news is not specially noteworthy, no movements general in their character and likely to influence the situation seriously so far as volume of product is concerned having occurred. In New York Standish is out for repairs. Muirkirk, in Maryland, is again banked for want of ore. In Virginia Walton blew in late in August. The same furnaces are running in Kentucky and Ohio. In Michigan Gaylord is added to the active list and one of the Eureka furnaces will soon be blowing. Elk Rapids has been doing some excellent work lately, making from 65 to 66 tons per day, and during the last week in August 458 tons (2260 pounds) and 1825 pounds. Newberry has been producing up to 63 tons per day, but has only fuel enough to work at the rate of 420 tons a week. The furnace is making iron with 80 bushels (at 20 pounds) of charcoal. In the aggregate the product of the Michigan furnaces was a little over 18,000 tons in August. In

Wisconsin Hinkle has probably resumed at this writing. In Missouri Midland lost 11 days making repairs. In Tennessee Aetna is out for repairs. In Alabama Round Mountain was in blast only the last six days of August. At Ironaton the foundations have been laid out and excavations begun for a second furnace.

Southern Iron Freights.

As announced by telegraph in *The Iron Age* of last week, freight rates from Southern producing centers have been advanced, the new rates to take effect on September 16:

Pig-Iron in Carloads—Per Ton of 2238 Pounds.

To	From Birmingham, Ala.	From Chattanooga, Tenn.	From Sheffield, Ala.
Akron, Ohio.....	\$4.00	\$3.50	\$3.75
Allegheny, Pa.; Bridgeport, Ohio; Pittsburgh, Pa.; Steubenville, Ohio; Wheeling, W. Va.; Bellaire, Ohio.....	4.65	4.15	4.40
Atchison, Kan.; Kansas City, St. Joseph, Mo.; Leavenworth, Kan.....	5.49	5.49	5.04
Atlanta, Ill.; Bloomington, Ill.; Mendota, Ill.; Springfield, Ill.....	4.25	4.00	4.00
Aurora, Ill.; Jacksonville, Ill.; East Saginaw, Mich.....	4.50	4.25	4.25
Aurora, Ind.; Lawrenceburg, Ind.....	3.25	2.75	3.00
Bellefonte, Ill.; East St. Louis, Ill.; St. Louis, Mo.....	3.25	3.00	2.80
Belmont, Mo.; Cairo, Ill.; Evansville, Ind.; Jeffersonville, Ind.; New Albany, Ind.....	2.75	2.50	2.50
Carpentersville, Ind.....	5.10	4.85	4.85
Chicago, Ill.; Danville, Ill.; Detroit, Mich.; Grand Crossing, Ill.; Hegewisch, Ill.; Michigan City, Ind.; Pekin, Ill.; Peoria, Ill.; Pullman, Ill.; South Bend, Ind.; Wyandotte, Mich.....	4.00	3.75	3.75
Cincinnati, Ohio; Newport, Ky.....	2.75	2.25	2.50
Cleveland, Ohio; Mansfield, Ohio; Toledo, Ohio; Zanesville, Ohio.....	4.00	3.50	3.75
Columbus, Ky.; East Cairo, Ky.; Louisville, Ky.....	2.50	2.25	2.25
Columbus, Ohio; Hillsboro, Ohio; Springfield, Ohio; Dayton, Ohio.....	3.50	3.00	3.25
Fort Wayne, Ind.; Greencastle, Ind.; Lafayette, Ind.; Mattoon, Ill.....	3.75	3.50	3.50
Hamilton, Ohio.....	3.45	2.85	3.20
Indianapolis, Ind.....	3.25	3.00	3.00
Lima, Ohio.....	3.75	3.25	3.50
Memphis, Tenn.....	2.00	2.00	1.55
Miamisburg, Ohio.....	3.55	3.05	3.30
Newark, Ohio.....	3.90	3.40	3.65
Sandusky, Ohio.....	4.20	3.70	3.95
Terre Haute, Ind.....	3.65	3.40	3.40

The freights on the following have been changed: Iron, architectural—including columns; pedestals; capitals; plates; saddles; door and window jambs, sills and lintels; rolled beams, channel-bars and girders—bar, band, boiler and plate iron or steel, all unpacked; bolts, nuts, rivets, staples or washers, in kegs, casks or drums; bridge iron; carriage and wagon axles; carriage or wagon skeins and boxes, packed in kegs, barrels or casks, released; car wheels, axles and trucks; castings, not machinery, each piece weighing 200 pounds or over, not packed, owner's risk of breakage; chains, in casks or barrels, value limited to 2 cents per pound, and so specified in bills of lading; crow-bars; cut nails and spikes, in kegs; fence-posts; fish-bars, fastenings and steel rail-braces; horse and mule shoes; jail plate; mattocks and picks, in bundles or barrels; pipe, cast or wrought, released; pipe-fittings, in kegs, casks or barrels; pipe-fittings, wired, in bundles, C. L. only; plow-molds, plow-plates, plow-points, plow-steel and plow-wings; railroad iron; sad-irons, in barrels or casks, released; sad-irons, in boxes, contents to be plainly marked on boxes and contract to be made by the shipper that no other

articles shall be put in the boxes; sash-weights, unpacked; wagon-tires; pig-iron, L. C. L. only.

Per 100 Pounds.

To	From Birmingham, Ala.		From Chattanooga, Tenn.	
	L. C. L.	C. L. Not less than 30,000 pounds.	L. C. L.	C. L. Not less than 30,000 pounds.
Wheeling.....	30	23	27	21
Pittsburgh.....	31	24	28	22
Kansas City.....	42	33	42	33
Springfield, Ill.....	31	24	29	23
St. Louis District.....	18	14	17	13
Chicago District.....	31	24	28	22
Cincinnati.....	16	12	13	10
Cleveland.....	29	22	26	20
Toledo.....	28	22	25	20
Louisville and district.....	14	11	13	10
Columbus.....	25	20	22	18

These are only the leading points. The circular issued gives too extensive a list to print in full.

The Cruiser Philadelphia.—The steel cruiser Philadelphia was successfully launched on Saturday last. The Philadelphia was provided for in an act of Congress approved March 3, 1887, and was contracted for by William Cramp & Sons, to cost, for hull and machinery, \$1,350,000. The specifications require a maximum speed of at least 19 knots per hour. For every quarter knot in excess the contractors are to receive a premium of \$50,000, and for every quarter knot of deficiency they are to suffer a deduction of \$50,000. Her keel was laid early in 1888, and the time limit in her contract expires on October 27, but she will not be finished for six months yet. The vessel is built of the best steel of domestic manufacture, is 335 feet long, 48½ feet beam, 19½ feet in depth of hold and 4324 tons displacement. The contractors guarantee an indicated horse-power of 10,500 under forced draft. The main battery is composed of 26-inch guns, and she will also carry a good secondary battery. She will be fitted with two electric-light plants of the most improved pattern and the most compact system best adapted to marine work. Each of the dynamos is to be capable of producing 3200 candle-power light. The motive power will be two triple-expansion engines, placed in separate watertight compartments, with cylinders of 38, 56 and 86 inches in diameter and 40 inches stroke, to drive two three-bladed screw propellers. There are four double boilers of 14 feet diameter and 20 feet long, designed to carry steam at a pressure of 160 pounds to the square inch. An armored conning tower, built of steel 3 inches thick, is to be fitted on the fore-castle, with a horizontal cover 1 inch in thickness.

The Eiffel Tower Company have paid off a third installment of 100 francs of the capital of 500 francs per share.

Lake Superior iron-ore miners and shippers are interested in the reports from Milwaukee that bids for constructing the railway which will be built from Iron Mountain to Escanaba to carry off the product of the Schlesinger syndicate's mines have been sent to New York for approval by the capitalists who are backing the scheme, and the contract will be let as soon as they are returned. In spite of denials by officers of the road, the impression is pretty strong that the Milwaukee and Northern is backing Mr. Schlesinger in this project. The bids submitted are

for the construction of 50 miles of track, and the cost is roughly estimated at from \$1,200,000 to \$1,500,000. It is understood among the contractors that the survey of the line from Iron Mountain to Florence, Crystal Falls and Iron River will shortly be commenced, and that bids for building that portion of the road will be invited.

Distribution and Control of Banking Capital.

The stability and strength of our banking system and the practical guarantees which it offers against panics and monetary stringency are well illustrated by the statistics which Comptroller Lacey has just completed of the national banking system for July 12, 1889. It is shown that of the 3239 banks comprised in the system 1234 are located in the Western States, 804 in the Middle States, 576 in the New England States, and the remainder in the Southern and Pacific States. Every year these banks are more equally distributed through the remoter parts of the country, the smaller banks showing a decided tendency to augment in numbers and in relative influence, to the advantage of agricultural and manufacturing growth, especially in the South and West. The commercial loans and discounts are reported by the Comptroller at \$1,779,000,000, founded partly on their own banking capital and partly on the growing volume of the deposits, which amount to \$1,489,000,000, not counting the balances and deposits of other banks. It is one of the new features that the volume of these deposits, as a source of loaning power, has been growing in the central cities, and especially in New York, more rapidly than ever before. The increasing preponderance of New York as a power in the financial world appears from the single fact that although her national banks number only 45 as compared with 55 in Boston and 44 in Philadelphia, the aggregate cash resources of this class of institutions in New York amount in round numbers to no less than \$97,000,000 against only from \$17,000,000 to \$18,000,000 controlled by each of her rivals. The banking capital of Boston, however, is put down at \$51,000,000, which is slightly in excess of New York. The two chief sources of strength are the cash reserves and surplus. Under Section 5199 of the bank law no bank can divide among its stockholders the entire sum of its annual earnings. Ten per cent. of the net profits of the business must be set aside every half-year as a surplus fund until this fund amounts to one-fifth of the aggregate capital of the bank. Such, however, has been the zeal and prosperity of the banks that the growth of the surplus far transcends the legal limits. Its amount is \$196,911,605. Adding the undivided profits, \$72,532,956, from Mr. Lacey's statistics, the aggregate surplus and profits amount to \$269,000,000, of which \$112,000,000 belong to the banks in the reserve centers and \$157,000,000 to the other banks. At present the aggregate cash reserves reported amount to \$288,000,000, of which \$197,000,000 are held by the 295 central banks of the reserve cities and \$91,000,000 by the 2944 country banks which are located in the various States. The concentration of resources at the principal commercial centers appears from the single statement that the loaning power of the entire national banking system is wielded to the extent of one-third at these main points of commercial activity. Besides the 3239 banks which are controlled by the National Banking laws and supervised by the Comptroller of the Currency there are 7855 other banks over which the National Banking law has no direct control.

The examination of the statistics of the banking system, since the date of its conception 26 years ago, shows that in every sea-port there has been a steady growth, bank-note circulation alone excepted. In this latter particular there is a notable decline. In 1873 the circulation of the banks rose to \$342,000,000, since which time it has rapidly declined and is now not more than \$129,000,000. The total contraction during the last five years has been \$180,000,000. This enormous withdrawal of bank-notes would have caused severe monetary stringency but for various safeguards, one of which is that the canceled bank-notes were replaced by other currency issues, and especially by the issues of silver coin and of gold and silver notes. With the disappearance of United States bonds as a basis for circulation a total cessation of bank-note issues is not improbable at a day not very remote, unless some new substitute can be devised.

The Boston *Herald* has a City of Mexico special saying that preparations are going actively forward for consolidating, under one strong company, all the iron-works in the southern part of that country, and a powerful organization, known as the Mexico Company of London, has concluded arrangements with owners of mines and iron-works, and Mr. Richard Povey, of that city, for taking all their properties. Several million dollars will be invested in adding to the existing plant, and in addition a large and costly steel-making plant will be set up. The object is to commence steel rail making. It is said that the iron there is known to be peculiarly adapted for making the best quality of steel.

The lines in the Chicago and Ohio River Association have advanced pig-iron rates to the same basis that was in effect prior to June 13. The new rates are per gross ton between Chicago and points on the north bank of the river, \$1.75; between Chicago and Louisville, \$1.95; between Chicago and Indianapolis, \$1.25. On iron ore in carloads the rate is advanced to \$1.50 per gross ton from Chicago to points on the north bank of the Ohio River.

The new foundry which the Farrel Foundry and Machine Company are building at Ansonia, Conn., promises to be one of the finest, if not the finest, building of the kind in the country. It is to be 302 feet long by 129 feet in width, divided into three parts. The central portion will be 55 feet 6 inches, and from the floor to the under side of the roof will be 40 feet, while the wings will be 43 feet and 30 feet in width respectively, and from the floor to the under side of roof trusses on this will be 20 feet. The central portion is supported on cast-iron columns placed 50 feet apart lengthwise of the building and 55 feet 6 inches apart crosswise of the building, these columns supporting the iron roof trusses and at the same time a line of heavy lattice girders to carry the traveling 50-ton crane, covering the entire central portion of the building. Between each of the side columns 25-ton gib cranes are so placed that they cover the wing portion of the building, and that they can be fed from the main traveling crane in the central portion of the building. Any size of casting can, therefore, be taken from any portion of the building and deposited in any other portion of the building entirely by power and without any hand-work whatever. The side walls of the building are of brick, but the balance of the building is entirely of iron, and the roof is covered with sheet-copper, except the ventilator, 20 feet wide, at the center of the central portion, the top of which is entirely of glass to light the interior. The wing portion also has sky-lights in each

panel. The building was designed and is being built by the Berlin Iron Bridge Company, of East Berlin, Conn.

PERSONAL.

The Baroness Burdett-Coutts, whose London address is 1 Stratton street, Piccadilly, is anxious to have the photographs, with autographs, of all those members of the American engineers' party who attended her garden party at Holly Lodge, Highgate. These, if sent shortly, will enable her to have an album prepared as a Christmas *souvenir*.

Ex-Senator Thomas C. Platt, of New York, has been elected president of the Tennessee Coal, Iron and Railroad Company.

Kenneth Robertson has resigned his position as general manager of the Sloss Iron and Steel Company, of Birmingham, Ala.

E. W. Grieves, formerly employed by the Harlan & Hollingsworth Company as draftsman, and recently master car-builder on the Baltimore and Ohio Railroad east of the Ohio River, has been made master car-builder of the entire Baltimore and Ohio Railroad system, with headquarters at Baltimore, Md.

Prof. R. H. Thurston, of Sibley College, Cornell University, Ithaca, N. Y., has returned from Europe.

Selden T. Scranton, one of the founders of the city of Scranton, Pa., and afterward of the Lackawanna Coal and Iron Company, celebrated with his estimable wife their golden wedding, at their house in Oxford, N. J., on Tuesday, September 3, 1889. Appropriate ceremonies filled the whole day. Mr. and Mrs. Scranton enjoy the hearty affection of a great multitude of those who have been their neighbors or in their employ, as well as of a large circle of relatives and personal friends; and gifts and congratulations were offered by all who could be present. Both the bride and groom are in excellent health, notwithstanding the dangerous carriage accident which befell Mr. Scranton a few weeks ago. They remain in the familiar home on the outskirts of Oxford. The occasion was made additionally interesting by the baptism of a grandson of the late Col. Charles Scranton, brother of S. T. Scranton. The babe united the names of the two brothers, being called "Charles Selden" Belden.

E. P. Boller's 502-foot double-track draw-bridge on the New York, Providence and Boston Railroad over the Thames River at New London, Conn., was swung into place on the 7th inst.

The Brooklyn Bridge trustees accepted the resignation of Wm. H. Paine, consulting engineer, tendered in July. His bill of \$5000 for patent rights connected with the grip used on the cable was referred to the Finance Committee.

The New York Congressman, S. S. Cox, late United States Minister to Turkey, died at his residence in this city Tuesday night of peritonitis, resulting from intestinal ulceration. He was born in Zanesville, Ohio, September 30, 1824.

Messrs. B. Dawson Coleman, Edward R. Coleman, Arthur Brock and Horace Brock, comprising the firm of Coleman & Brock, have purchased all the stock of the Pennsylvania Bolt and Nut Company, Lebanon, Pa., except that held by James Lord. Arthur Brock has been elected president and James Lord continues as secretary and treasurer. Coleman & Brock are the proprietors of the extensive Lebanon Furnaces and are largely interested in the famous Cornwall Ore Bank Company.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., September 10, 1889.

Pig-Iron.—The week has not developed any new feature in this department, so that things are practically in the same position as noted in our last report. Prices are steady; in some cases they manifest an advancing tendency, although several new brands are being offered at figures slightly under regular quotations. This gives some parties a chance to talk the market down, and it is not unlikely that it has some influence on prices, although, of course, if good Irons are as scarce as reported such competition cannot have much weight. Still, buyers say they can buy good No. 2 at \$16 and good No. 1 at \$17, so that those who have been getting \$1 more find their customers a little inclined to grumble. Sellers of these new brands claim that they have to make nearly \$1 difference in price before any one will give the article a trial. Hence, to quote the market fairly, it is right not only to mention these prices, but also to state why such apparently low figures are accepted. Taking standard brands as a criterion, we should say that the tone of the market is strong, with an upward tendency. Western markets are higher in proportion than our own, so that furnaces located in that direction are placing a good deal of material to the west of them, instead of East, as they were doing some time ago. On the whole, therefore, the supply of good Iron is barely sufficient for the demand, although this is in some measure offset by larger offerings of new brands, or of brands not quite up to the usual standard of quality. The result is a widening of prices, the extreme range both ways being \$17 @ \$19, delivered, for No. 1 Foundry, \$16 @ \$17 for No. 2 and \$15 @ \$15.50 for Gray Forge.

Blooms.—The market is active, with firm and advancing prices. Orders for early delivery are hard to place, as mills are full of work. Ordinary quotations are given as follows: \$30 @ \$30.50, delivered, for Nail Slabs; \$32 @ \$33 for Tank Slabs; \$36.50 @ \$37 for Shell Slabs; \$39 @ \$40 for Flange, and \$41 @ \$43 for Fire-Box; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$42.50 @ \$43; Scrap Blooms, \$32.50 @ \$33.50 per "Bloom" ton of 2464 lb.

Muck-Bars.—Business has been a little quiet of late, but there is no material change in prices. Holders ask all the way from \$28.75 to \$29.50, at mill, according to location, quality, &c., while buyers are not inclined to bid much over \$29, delivered, although, so far as known, no sales have been made at less than \$29.50. There is a little hesitation on both sides, but on the whole the feeling is strong.

Bar-Iron.—There is plenty of business offering at from 1.80¢ to 1.85¢, but mills have plenty of work on hand and are inclined to make 1.90¢ an inside figure. Of course some are not as crowded with work as others are, and consequently not as firm in their prices, but as a rule 1.85¢ is an inside figure. The outlook is of the most encouraging character, and the impression prevails that sellers take no risk in biding their time for new business.

Skelp Iron.—There is a great deal of work in hand, some of the mills having their entire capacity engaged for the greater part of the year. There is a fair inquiry at about 1.85¢ for Grooved and 2¢ @ 2.10¢ for Sheared, but sellers ask

1.90¢ and 2.15¢ @ 2.25¢, according to sizes, &c.

Plates.—The demand for Plates continues full up to the capacity of the mills, and early deliveries are hard to secure. There is a great deal of work to come out later on, but buyers are not fully prepared to pay the prices asked; neither are sellers at all anxious to make sales so far ahead unless some inducements are offered. Prices are not quotably dearer than they were a week ago, but there is a stronger feeling, and any pressure to buy would be likely to cause an immediate abandonment of the inside figures. Meanwhile we quote as follows: 2.15¢ @ 2.25¢, delivered, for Ordinary Plates and Tank Plates; 2.25¢ @ 2.30¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.25¢; Fire-Box, 3.7¢ @ 4¢; Steel Plates, Tank and Ship Plate, 2.25¢ @ 2.35¢; Shell, 2.6¢ @ 2.7¢; Flange, 2½¢ @ 3¢; Fire-Box, 3½¢ @ 4¢.

Structural Material.—There is no change to note from last week. There is an abundance of work and all the mills are crowded to their fullest capacity. Prospects continue favorable, and the chances are that the activity will be continued for a long time to come. Prices remain about the same as last week, although the tendency is toward higher figures. For the present quotations are about as follows: Bridge Plate, 2.20¢ @ 2.30¢, delivered; Angles, 2.15¢ @ 2.25¢; Tees, 2.6¢ @ 2.7¢; Beams and Channels, 2.8¢ for Iron or Steel, all delivered at Philadelphia or its equivalent.

Sheet-Iron.—The demand is fully maintained, but there is no change in prices. All grades are in demand, and carload lots command prices as follows:

Best Refined, Nos. 14 to 20.....	3¢
Best Refined, Nos. 21 to 24.....	3.20¢
Best Refined, Nos. 25 to 26.....	3.40¢
Best Refined, No. 27.....	3.50¢
Best Refined No. 28.....	3.60¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3½¢
Best Soft Steel, Nos. 21 to 24.....	3½¢
Best Soft Steel, Nos. 25 to 26.....	3½¢
Best Soft Steel, No. 27.....	4¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	.65 ¢
Common, discount.....	.67½ ¢

Steel Rails.—The feeling is one of firmness and strength, although the demand is not specially active, and sales are mostly in small lots at last week's prices. Winter work might possibly be taken at about \$28 at mill, but early deliveries are quoted \$29 and upward.

Old Rails.—There is not much to report in this line, as there are very few Rails for sale, and they are mostly held at figures above what buyers are willing to pay. Sales are being made at about \$25, delivered in consumers' yards, but holders ask pretty nearly that for spot lots, and in some cases still higher figures are asked.

Scrap-Iron.—The market is firm, and although full prices are realized, no advance in prices can be noted. Quotations are ordinarily about as follows: \$21 @ \$21.50 for cargo lots; \$21.50 @ \$22 for carload lots, delivered; or for choice, \$22.50; No. 2 do., \$15 @ \$16; Turnings, \$14 @ \$15; Old Steel Rails, \$16.50 @ \$17.50; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish-Plates, \$23 @ \$24.

Wrought-Iron Pipe.—Mills are full of orders and prices firm at last week's discounts. Butt-Welded Black, 50 ¢; Lap-Welded Black, 62½ ¢; Butt-Welded Galvanized, 42½ ¢; Lap-Welded Galvanized, 50 ¢; Boiler-Tubes, 52½ ¢ @ 57½ ¢, according to size.

Nails.—The market is not very active at present, although prices remain pretty steady at from \$1.85 to \$1.90 for carload lots and \$2 for lots from store.

Chicago.

Office of *The Iron Age*, 59 Dearborn street,
CHICAGO, September 9, 1889.

Prices continue to tend upward in this market, although no heavy buying is in progress. Complaints of slow shipments on old contracts are frequently heard, so that the Iron and Steel works are undoubtedly as pressed with orders as they have claimed to be. On all sides the outlook is asserted to be in favor of good trade.

Pig-Iron.—One of the most significant features of the week was the appearance in this market of consumers who usually buy their supply of Iron at other points. It is true they were in search of special qualities, but the scarcity of such Irons helps to increase the demand for others. Good sales have been made both of Coke and Charcoal Iron, but much more business could have been done if sellers had been willing or able to meet the views of buyers with regard to deliveries. Numerous consumers desire to cover their necessities for several months, fearing a material advance in price, but they have not the money to spare to pay cash and therefore seek to buy for scattered deliveries, which furnace companies are not willing to arrange for under existing conditions of the market. Ohio Softeners and Silveries have as yet made but little advance on their old prices, the demand for them having been interfered with by the use of high silicon Pig and the silica process of making castings. A reaction appears to be taking place in this respect, however, and latterly quite a demand has sprung up for the discarded favorites, so that they will probably soon join in the upward movement. Freight rates from Ohio and Southern points will be advanced from 25¢ to 40¢ to points in this vicinity on the 16th inst. and sellers are using these advances as levers to work up business on Irons that have been somewhat neglected. Quotations are as follows, cash, f.o.b. Chicago: Bessemer, \$18; Lake Superior Charcoal, \$18.50 @ \$19; Local Coke, No. 1, \$16.50 @ \$17; No. 2, \$15.50 @ \$16; No. 3, \$15; Chicago and Bay View Scotch, No. 1, \$16.50 @ \$17; American Scotch (Blackband), No. 1, \$18.50 @ \$19; Jackson County, No. 1, \$17.50 @ \$18; Hocking Valley and Hanging Rock Silvery, No. 1, \$17.25 @ \$17.50; Southern Coke, No. 1, \$16.50 @ \$16.75; No. 2, \$15.50; No. 3, \$15; No. 1, Soft, \$16; No. 2, Soft, \$15; Gray Forge, \$14.50 @ \$14.75; Mottled, \$14 @ \$14.25; Tennessee Charcoal, No. 1, \$18.50; Alabama Car-Wheel, \$24 @ \$25.

Bar-Iron.—No large inquiries are reported, but, on the other hand, manufacturers claim that at present they would prefer to avoid making heavy sales for forward delivery at prices now ruling. Plenty of small orders are being received. Mills still quote 1.70¢ for Common and 1.80¢ for Refined in carload lots, f.o.b. Chicago, but expect to get more when freight rates advance. Store prices have been pushed up slightly, and bottom rates are now 1.80¢ for Common and 1.90¢ @ 2¢ for Refined.

Structural Iron.—A very fair demand is reported in this line, but no important deals have been closed since our last report. Quotations for mill lots are as follows, f.o.b. Chicago: Angles, 2.25¢ @ 2.35¢; Universal Plates, 2.30¢ @ 2.40¢; Sheared Plates, 2.35¢ @ 2.40¢; Tees, 2.65¢ @ 2.70¢; Beams and Channels, 2.90¢. From stock on hand: Angles, 2.40¢; Tees, 2.70¢ @ 2.75¢; Beams and Channels, 3.40¢.

Plates, Tubes, &c.—The heaviest order in this line during the week was taken by Charles W. Davenport, who sold 6000 sheets of C No. 1 Iron of No. 8 gauge, 48 inches by 79½ inches, and 45,000 lb tensile strength, aggregating about 550 tons, to

go to Portland, Ore., 50 tons to be shipped at once and the balance in 90 days. Dealers report a good demand for prompt shipment, the largest local order being for 250 tons of Tank. Tubes are very scarce and firm. Prices are now waiting for the readjustment of freight rates, when a new schedule will probably obtain. Store prices are as follows: Iron Sheets, Nos. 10 to 14, 2.70¢ @ 2.80¢; Steel, Nos. 10 to 14, 2.75¢ @ 2.80¢; Tank, Steel and Iron, 2.50¢ @ 2.60¢; Steel Plates, Shell, 3¢; Flange, 3.50¢; Fire-Box, 4.25¢; Otis, 5.50¢; Ulster Iron, 3.75¢; Boiler-Rivets, 4¢ @ 4.25¢; Boiler-Tubes, 52½ % discount on 1½-inch and less and 57½ % discount on 2-inch and larger. Mill prices are moving upward, and it is now difficult to get a firm quotation from agents. They quote carload lots nominally, f.o.b. Chicago, at 2.60¢ @ 2.80¢ for Nos. 10 to 14 Iron Sheets; 2.70¢ @ 2.90¢ for Nos. 10 to 14 Steel Sheets; 2.50¢ for Tank Iron and 2.60¢ for Tank Steel.

Sheet-Iron.—We hear of a few orders taken by mills at 3.05¢, f.o.b. mill, for No. 27 Common, for late delivery, but a considerably higher price would be asked for prompt shipment. The price of No. 27 from store is 3.30¢ @ 3.40¢, according to the size of the order.

Galvanized Iron.—Heavy sales have been made by manufacturers' agents, and the general condition of trade has so greatly improved that all prices are gradually moving up to the standard established a week ago. Manufacturers' prices for large quantities are now 67½ % and 2 % to best buyers, while small quantities from store are sold at 65 % @ 65 % and 5 %.

Merchant Steel.—Manufacturers of Open-Hearth Steels have advanced their quotations \$2 ½ ton, covering Machinery, Spring, Toe Calk and Tire Steel, &c. Agricultural buyers are now placing some of the large orders alluded to in last week's report. The demand for high-class Tool Steel is excellent. Quotations on mill lots are as follows, f.o.b. Chicago: Spring and Tire Steel, 2.35¢; Toe Calk, 2.40¢ @ 2.50¢; Open-Hearth Machinery, 2.35¢; Bessemer Machinery, 2.10¢ @ 2.15¢. From store jobbers quote: Mild Machinery, 2.15¢ @ 2.25¢; Bessemer Machinery, 2.40¢ @ 2.60¢; Open-Hearth Machinery, 2.70 @ 3¢; Tire Steel, 2.40¢ @ 2.50¢; Tool Steel, 7.75¢ @ 8.50¢; Sheet Steel, 7¢ @ 10¢.

Steel Rails.—Although no transactions of magnitude have come to light since our last report, the prospects are very good for a full winter's work by the local mills, as large inquiries have been received for such deliveries and negotiations are now in progress. Prices are strong and could easily be advanced, but the sellers are protecting their customers and furnishing such deliveries as it is still in their power to make at \$32 @ \$32.50 for standard sections and \$35 for 30s and 35s.

Track Supplies.—Quotations are as follows, f.o.b. Chicago: Steel Splice-Bars, 1.90¢ @ 1.95¢; Iron Splice-Bars, 1.80¢ @ 1.85¢; Spikes, 1.95¢ @ 2¢; Bolts, Square Nuts, 2.50¢ @ 2.55¢; Hexagon, 2.60¢ @ 2.65¢.

Old Rails and Wheels.—A leading railroad is reported to have sold the balance of a large stock of Old Iron Rails at \$24.50. This stock had been held for a long time to await the advent of good prices. Pittsburgh parties are actively searching for Old Steel Rails, and short lengths are now worth \$16.25 here, while long lengths are quoted at \$18 @ \$19. Old Car-Wheels are quiet, and can be had at \$18.25 @ \$18.50, although some holders ask \$19.

Scrap-Iron.—Old material is moving to some extent, but the demand is not heavy. In comparison with the price of Old Rails the rate at which No. 1 Forge

is selling is abnormally low. Quotations are as follows ½ net ton: No. 1 Forge, \$18.50 @ \$19; No. 1 Mill, \$14.50 @ \$15; Splice-Bars, \$20.50; No. 2 Mill, \$9 @ \$9.50; Car-Axles, \$23.50 @ \$24; Horseshoes, \$18.50; Wrought Turnings, \$11.50; Axle Turnings, \$13; Wrought Pipe, \$13 50; Locomotive Tires, \$16.25; Leaf Steel, \$15 25; Coil Steel, \$14.50; Cast Machinery, \$12; Stove-Plates, \$9; Cast Borings, \$8.75; Mixed Country Scrap, \$15.

Hardware.—The month of August will be a memorable one in the Chicago Shelf-Hardware trade for the magnitude of the business transacted. September has also started out well, but it is usually a good month. Country dealers are now stocking up very generally, and some fine orders for Cutlery were among the goods sold here during the past week. In Heavy Hardware current business is fair, every week showing an improvement. In Iron and Steel goods prices are advancing, in sympathy with the upward movement in the less finished product. Nuts, Bolts, Washers, &c., are firmly held at the advances recently made. There is every indication of a heavy trade this fall in Carriage and Wagon Trimmings.

Nails.—Manufacturers' agents report a continuous stream of inquiries from out-of-town buyers, and the factories which have been willing to meet current prices are now well sold up for this month. They quote \$1.80, f.o.b. mill, their bottom rate for Steel Nails, with a 30¢ average, and intimate that this price must soon be advanced on account of higher freight rates, dearer raw material, &c. Jobbers quote Steel Nails at \$1.95 in small lots, \$1.90 in carloads, and Wire Nails at \$2.35 in small lots, \$2.30 in carloads.

Barb-Wire.—This is now the cheapest article in the market, relatively speaking, and higher prices are freely predicted for it. Rods are so much dearer than they were that it is difficult to understand how Barb-Wire continues to sell at its old price—namely, 2.75¢ for Painted and 3.35¢ for Galvanized, in small lots.

Pig-Lead.—A decided change has come over the market, and consumers now seem to be as anxious to buy as they were previously indifferent. Holders, however, have not hastened to meet their wants and transactions have been light, with quotations ranging from 3.90¢ to 4¢.

St. Louis.

OFFICE OF THE Iron Age, 214 N. Sixth st.,
St. Louis, September 9, 1889.

Pig-Iron.—The first week of the month opened auspiciously for the Iron trade, the demand being very large, and furnaces are consequently working to their full capacity and seem to have implicit confidence in the future of the market, so much so that they are doing little or nothing to "drum up" trade. The stocks on hand among consumers are small, as indicated by the fact that nearly all orders are given for prompt shipment, and in some cases these have been declined, for the reason that either the furnace was filled with orders or the present prices are not high enough to warrant the acceptance. The question is not so much one of value as it is of supply, so that with a continuance of the present demand further advances seem highly probable. Forge Irons are beginning to show more activity and prices evince more firmness. An order for 250 tons Gray Forge at \$14, f.o.b. St. Louis, was refused, and \$14.25 named as the lowest possible figure at which the Iron could be bought. Foundry Irons are in large demand and several sales were made during the past week, averaging about \$16 for No. 1 and \$15 for No. 2. A peculiar feature of the market is the acceptance of 100-ton lots at current rates

and the almost universal refusal to sell over this amount unless the conditions are particularly favorable to the seller. The following prices show the basis on which sales have been made during the week under review, and are for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	\$16.00 @ \$16.50
Southern Coke, No. 2 Foundry,	15.00 @ 15.50
Southern Coke, No. 3 Foundry,	14.50 @ 14.75
Gray Forge.....	14.00 @ 14.50
Ohio Softeners.....	17.00 @ 19.00
Lake Superior Charcoal.....	20.00 @ 21.50

Missouri.

Charcoal Foundry, No. 1.....	16.25 @ 16.50
Charcoal Foundry, No. 2.....	15.00 @ 15.50

Tennessee.

Charcoal Foundry, No. 1.....	18.00 @ 18.50
Charcoal Foundry, No. 2.....	17.00 @ 17.50
Connellsville Coke, f.o.b. East St. Louis,	\$4.85; St. Louis, \$5.

Bar-Iron.—The demand continues to increase and mills have more orders on hand than they can comfortably handle. Complaints are made daily in regard to late shipments, and it is almost impossible to place an order with any prospect of immediate delivery. Prices are strong and are quoted as follows: Lots from store, 1.85¢; mills quote from 1.70¢ to 1.75¢ for good round orders.

Barb-Wire.—Mills are running full time, with the demand daily increasing, and the outlook is better to-day than it has been for months. As intimated in last week's report, prices have been advanced and mills have withdrawn all quotations. The new list is as follows: For small lots Painted, 2.85¢; Galvanized, 3.40¢; carload lots Painted, 2.80¢; Galvanized, 3.35¢.

John E. Cartwright, manager of Chamberlain, Wheeler & Co., announces that their St. Louis office will be located in Room 403, Bank of Commerce building.

Louisville.

LOUISVILLE, KY., September 7, 1889.

Pig-Iron.—The market has shown great strength during the past week, mainly from sales at other points than from actual transactions here. The tendency seems upward and it is thought a slight advance will take place in the immediate future. Almost all consumers here have bought for the next 60 days, but owing to the strength of the market they are trying to anticipate their future wants. The amount of work in sight is very large, and foundries in this vicinity all report that they have as much work on hand as it is possible for them to turn out. It is understood that some of the pipe works in the West will be in the market during the coming week, and as their buying is generally followed by purchases all along the line, it is thought that such a movement will materially tend to increase the price of Iron. Current quotations are as follows:

Southern Coke, No. 1 Foundry,	\$15.00 @ \$15.50
Southern Coke, No. 2 Foundry,	14.50 @ 15.00
Southern Coke, No. 3 Foundry,	13.75 @ 14.25
Gray Forge.....	13.25 @ 13.75
White and Mottled, different grades	12.75 @ 13.25
Silver Gray, different grades.....	13.25 @ 13.75
Southern Charcoal, No. 1 Foundry	16.50 @ 17.00
Southern Charcoal, No. 1 Mill.....	15.00 @ 15.50
Southern Car-Wheel, standard brands.....	22.00 @ 23.00
Southern Car-Wheel, other brands	18.25 @ 19.75
Hanging Rock Coke, No. 1 Foundry.....	15.75 @ 16.25
Hanging Rock Charcoal, No. 1 Foundry.....	19.75 @ 21.25
Hanging Rock, Cold Blast.....	21.00 @ 23.00

Detroit.

WILLIAM F. JARVIS & Co., under date of September 9, 1889, say: The past week, owing to continued heavy demands, has shown a degree of sensitiveness in the market which is most satisfactory to the seller. Several lots of Southern Forge

Iron have been bought at full market quotations. Ohio Irons have also remained firm, and Lake Superior Charcoal has proved even more scarce than was at first supposed. Several furnaces are totally unable to furnish Pig-Iron for delivery prior to the close of navigation, and buyers depending on their regular grades who have delayed purchasing find themselves in some cases obliged to make substitution of other brands. Lake freights have advanced somewhat; canal rates are high, and consumers are paying to-day even a higher price than Iron could have been delivered at a week ago. It is a steady progression in the right direction. The market is fairly quotable to-day as follows:

Lake Superior Charcoal, all numbers	\$19.25 @ \$19.75
Lake Superior Coke, all ore	18.50 @ 19.50
Lake Superior Coke, cinder mixed	17.50 @ 18.50
Standard Ohio Blackband	18.00 @ 18.50
Southern No. 1	17.00 @ 17.50
Southern Gray Forge	15.50 @ 16.00
Southern Silvery	16.50 @ 17.00
Jackson County (Ohio) Silvery	18.00 @ 18.50
Old Wheels	18.00 @ 19.00

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave.,
Pittsburgh, September 10, 1889.

The lull which has been expected for some time has come; the volume of new business, especially in raw materials, was not nearly as large last week as that of the five or six preceding weeks. Brokers almost without exception had much smaller reports to make. Some few reported that they had done next to nothing. Furnace men generally are sold up to the close of the present year, and they are not in condition, even if so disposed, to make additional contracts, while consumers generally have anticipated future wants to the same extent, so that while the latter for the time are not inclined to make additional purchases, the former, as already noted, do not care to make additional contracts until they have filled those already made.

Pig-Iron.—There has been a falling off in business during the past week, but it was not unexpected. The anticipated advance in coke and higher freight rates which go into effect the middle of this month have been discounted, and to these more than anything else may be attributed the last advance in Pig-Iron. Consumers expected that the causes in question would push Pig up still higher and they contracted more freely than they would otherwise have done. Prices as compared with those of a week ago remain unchanged, as follows:

Neutral Gray Forge	\$15.50 @ \$15.75, cash.
All Ore Mill	16.25 @ 16.50, "
White and Mottled	14.00 @ 14.50, "
No. 1 Foundry	17.00 @ 17.50, "
No. 2 Foundry	16.00 @ 16.50, "
No. 1 Charcoal Foundry	23.00 @ 23.50, "
No. 2 Charcoal Foundry	21.50 @ 22.00, "
Cold Blast Charcoal	25.00 @ 26.00, "
Bessemer Iron	18.00 @ , "

So far as we are advised there have been no sales of Bessemer Pig made above \$18, cash, and good brands of Gray Forge can be had for near-by delivery at \$15.50, cash. Some few sales are reported to have been made for future delivery at \$15.75, cash.

Muck-Bar.—Continues rather quiet, and the undertone of the market appears to be weaker, although the prices remain unchanged. We are advised of a sale of 1000 tons for September and October at \$28, cash, but it is intimated that there are sellers at \$27.75. There appears to have been a big stock on the market, and the demand has not panned out as well as expected. At present prices it is claimed that it is cheaper relatively than Pig-Iron, and there is not the demand expected.

Spiegel.—Prices in this market have advanced, and we now quote at \$31.50

@ \$32 for 20%. Manganese is also higher, with sales reported at \$64.50 @ \$65 for 80%.

Manufactured Iron.—The mills are generally fully employed, and prices are firm, under a tendency to go still higher. There is a good demand for all kinds of Merchant Iron, and the Merchant Iron mills are reported working up to their full capacity. Bars are quoted stiff at 1.75¢ @ 1.80¢; Plates, 2.25¢ @ 2.30¢; No. 24 Sheet, 2.85¢ @ 2.90¢, all 60 days, 2% off for cash. Skelp Iron is firmer, 1.80¢ @ 1.85¢ for Grooved, and 2 10¢ @ 2.20¢ for Sheared—most of the business on inside quotations. Mills making a specialty of Skelp, and some of them are working on it exclusively, have been sold ahead since early in the summer, and have been obliged in not a few instances to decline business.

Nails.—There appears to be little or no improvement in the demand for Cut Nails, but prices are firmer, owing to the largely increased cost of Slabs, which have advanced \$2.50 @ \$3 per ton. We continue to quote \$1.90, 60 days, 2% off for cash, but it is doubtful whether contracts for future delivery could be made at the price quoted. There are but few Nails being made here, and it may be attributed to the fact that there is nothing in the business at present prices. Chess, Cook & Co., and Jones & Laughlins are the only firms here at present pretending to do anything, and they are not doing very much. The card for Wire Nails remains unchanged at \$2.25, but rumors still obtain that the card is being cut.

Wrought-Iron Pipe.—The Pipe mills continue to be very busy and are likely to be until well on toward the close of the present year, as they are all sold ahead. Prices are firm at combination rates, which may be advanced at the monthly meeting of the association, which takes place in this city this week; however, it is said that some manufacturers who are pretty well sold ahead will oppose making any change in prices at present. Discounts on Black Butt-Welded Pipe, 50%; on Galvanized do., 42½%; on Black Lap Welded, 62½%; on Galvanized do., 50%; Boiler-Tubes, 1½ inch and smaller, 52½%; 2-inch and larger, 57½%; Casing, 5¼-inch, 60%.

Old Rails.—There has been no business in Old Iron Rails here the past week, and it is difficult to give reliable quotations in consequence. So far as we can learn, there have been very few sales above \$25, but they cannot be laid down here from sources of supply under \$26 @ \$27, which consumers are not yet prepared to pay. As compared with the lowest point there has been an advance in this market of \$3.50 @ \$4 per ton, and it looks as if they would have to go still higher. Old Steel Rails are also firmer. Last sales reported were at \$19 for short and \$20.50 for long pieces.

Billets, Blooms, &c.—There is a continued demand for Bessemer Steel Billets, and as the mills are all oversold brokers report that it is difficult to place an order here for near-by delivery. They are now quoted at \$29 @ \$30, according to quality, size, delivery, &c. Nail Slabs are also up, and they are worth almost as much as Billets, but there is nothing like the inquiry for them. Rail Crops, in the absence of sales, may be quoted at \$19.50 @ \$20 and Bloom Ends at \$19 @ \$19.50.

Railway-Track Supplies.—Are firmer, and while we make no change in our quotations it is doubtful whether contracts for future delivery could be made at prices quoted. Spikes, 2.10¢, 30 days; Splice Bars, 1.80¢ @ 1.85¢; Track Bolts, 2.75¢ @ 2.85¢, with Square and Hexagon Nuts.

Steel Rails.—Are still quoted at \$30, cash, at mill, for delivery the present year; the last sale reported was at \$30 for Novem-

ber delivery. For winter or spring delivery the price above quoted would probably be shaded.

Old Material.—There is a very fair demand and prices steady but unchanged. No. 1 Wrought Scrap, \$20 @ \$20.50, net ton; Wrought Turnings, \$13.50 @ \$14; Car Axles, \$24 @ \$25; Cast Scrap, \$14.50 @ \$15, gross; Cast Borings, \$11.50 @ \$12.50; Old Car-Wheels, \$18 @ \$18.50.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts.,
CINCINNATI, September 9, 1889.

Pig-Iron.—Strength and activity have been the most prominent features in the local market for Pig-Iron during the past week. Gray Forge has been most in demand and has secured a larger advance than other grades, but No. 3 Foundry has sold well at higher prices. The inquiry for other Coke Iron, too, has been most satisfactory to the furnaces, and even the higher-priced Charcoal Iron has met with more favor. Ohio, Pennsylvania and Virginia Irons have shared with the Tennessee, Alabama and Georgia product in larger proportion, due to the better demand for such grades, as well as the fact that the distinct Southern stacks are well supplied with orders. Although a further advance of 25¢ has been realized on most grades of Coke Iron, advices are being received from producers to hold for a further advance of 25¢ up to January 1. No. 1 and No. 2 Foundry, while selling in small amounts individually, have sold to a larger extent in the aggregate. Car-Wheel Iron has been less active, but at the close there is a more urgent inquiry. New and old repaired stacks are embracing the present opportunity to blow in; but with the present large consumption and the fund of confidence held by the business community, no better time could exist for such increase, with the mills full of orders, the foundries active and the architectural works busy. Among the sales were 2000 and 500 tons Southern Gray Forge at \$13.75, but sales were made early in the week at \$13.50, while at the close the asking rate is \$14; 2000 tons No. 3 Southern Foundry sold at \$14.25, and 1000 No. 2 Soft at \$13.75, and 1000 tons Southern Car-Wheel at \$23.50, 1000 tons No. 1 Southern Charcoal at \$18.25, all on cash basis for delivery during next three months. Mottled Iron has been wanted at \$13, but has been held higher. The following are approximate prices current here at the close for cash, f.o.b.:

Foundry.

Southern Coke, No. 1	\$15.25 @ \$15.50
Southern Coke, No. 2	14.50 @ 14.75
Southern Coke, No. 3	14.00 @ 14.25
Ohio Soft Stone Coal, No. 1	16.0 @ 16.50
Ohio Soft Stone Coal, No. 2	15.00 @ 15.50
Maboning and Shenango Valley	16.00 @ 16.50
Hanging Rock Charcoal, No. 1	20.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.00 @ 21.50
Tennessee and Alabama Charcoal, No. 1	17.50 @ 18.50
Tennessee and Alabama Charcoal, No. 2	16.50 @ 17.50

Forge.

Gray Forge	@ 13.75
Mottled Neutral Coke	13.00 @ 13.25

Car-Wheel and Malleable Irons.

Southern Car-Wheel	23.00 @ 23.50
Hanging Rock, Cold Blast	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable	19.75 @ 20.25

Manufactured Iron.—The mills and foundries, machine-shops and architectural works are well provided with orders for several months and a firm and confident tone prevails, with full prices realized, but no change is made in the general range.

Nails.—There has been a firm tone prevailing, with a satisfactory volume of business. Iron and Steel Nails, 12d to 40d, sell at \$1.85 @ \$1.90 per keg, with 10¢ rebate in carload lots, at the mills. Steel Wire Nails sell at \$2.40 for 60d.

Old Material.—There has been a fair demand and moderate offerings of Old Rails, which are quotable at \$24, cash, at the close. Old Wheels have been quiet and are quotable at \$18.50 @ \$19, spot cash.

The representatives of Thos. A. Mack have word that stack No. 2 of the Eureka Furnace, with entire new lining, has blown in. Stack No. 1, of the same furnace, is doing better work.

Matthew Addy & Co. have added two furnaces to the list of their agencies, the Tecumseh (charcoal) and the Anniston (coke), Alabama. The latter furnace is operated by the Woodstock Iron Company.

Cleveland.

CLEVELAND, September 9, 1889.

Iron Ore.—The steady advance in lake freights and the attending increase in the demand for Ore has developed the fact that nearly all the mining companies have sold about all the Ore they will be able to produce this season. The Republic, Champion, Chapin and many other mines have little or no Ore to sell. For nearly all the Gogebic Bessemer now to be obtained \$5.10 @ \$5.25 is readily paid. Menominee Bessemer are practically all sold and only a few thousand tons of the high-grade Specular and Magnetic Bessemer can be purchased. It is the opinion of Ore men that the aggregate sales for the season already exceed 5,600,000 tons and that navigation will close with less unsold Ore on hand than has been left on the docks since the opening of the Lake Superior mines. About 12,000 or 15,000 tons of non-Bessemer Ore has been sold during the past week at \$3.75 @ \$4.10, f.o.b. vessels, Ohio ports. The demand is steady, but Ore men anticipating a slight increase in prices in consequence of the advancing vessel rates are not attempting to force sales. The vessel men are now being paid \$1.10 from Escanaba, \$1.25 from Marquette and \$1.40 from Ashland and Two Harbors. Following are the quotations:

No. 1 Specular and Magnetic Bessemer Ores, Bessemer quality.....	\$5.75 @ \$6.25
No. 1 Specular and Magnetic Ores, Non-Bessemer quality.....	4.50 @ 5.25
Red Hematite Bessemer Ores, Bessemer quality..... @ 5.00
Red Hematite Ores, Non-Bessemer quality.....	3.75 @ 4.25
Menominee Range Ores, Bessemer quality.....	4.90 @ 5.10
Menominee Range Ores, Non-Bessemer quality.....	3.75 @ 4.00
Gogebic Range Ores, Bessemer quality.....	4.90 @ 5.25

Pig-Iron.—The market has lost none of its firmness, although the heavy buying of the past few weeks is being followed by a less active movement on the part of both buyers and sellers. Prices are, however, slowly advancing and the tone of the market is improving. The inquiry for Iron for future delivery is still heavy, Bessemer Irons being the favorites, while both Neutral and Red Short Mill Irons are eagerly taken. Following are cash quotations:

Nos. 1 to 6 Lake Superior Charcoal.....	\$20.00 @ \$20.50
No. 1 Strong Foundry, $\frac{1}{2}$ ton.....	17.00 @ 17.80
No. 2 Strong Foundry, $\frac{1}{2}$ ton.....	16.00 @ 16.80
No. 1 Strong Foundry, Bessemer quality, $\frac{1}{2}$ ton.....	17.50 @ 18.00
No. 1 American Scotch, $\frac{1}{2}$ ton.....	16.80 @ 17.30
No. 2 American Scotch, $\frac{1}{2}$ ton.....	15.80 @ 16.30
No. 1 Soft Silvery, $\frac{1}{2}$ ton.....	16.50 @ 17.50
Mahoning and Shenango Valley Neutral Mill Irons, $\frac{1}{2}$ ton.....	14.75 @ 15.00
Mahoning and Shenango Valley Red Short Mills, $\frac{1}{2}$ ton.....	14.75 @ 15.75

Scrap-Iron.—Old American Rails are selling at \$24 @ \$24.50. Old Wheels are not in much demand, but selected Axles are eagerly taken at \$25.50 @ \$26.

A rolling-mill is one of a number of new industrial enterprises projected in Des Moines, Iowa.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, September 9, 1889.

A general review of the condition of the country through the South as well as many of the Western States, resulting from a recent trip through these sections, develops an unusual degree of activity and upward tendency in all business lines, especially where manufacturing enterprises are concerned. And to this can be added probably one of the largest crop yields that the entire country has ever seen. So far as the South is concerned the present year will be a marked one in the history of that section. While the crops are large, manufacturing enterprises are simply on a boom. Wherever you may go will be seen the results of new concerns, constructed or being constructed, with inevitable results of new improvements through the neighborhood.

Pig-Iron.—There appears to be no sharp advance in prices, the tendency on the part of the furnace owners being to keep the reins of prices well in hand. It would be a calamity to the business for a boom in prices to take place at the present time. So far this question has been handled with excellent judgment, taking into consideration the fact that there are so many sellers in the field that are not acting in unison. Just at the present time Forge Irons appear to be in the greater demand; at the same time there is no dearth of orders for the Foundry grades. So far as prices are concerned, in most cases they appear to be gradually creeping up, and sales made ten days ago could not be duplicated to-day. One policy that appears to be pursued is to ask an advance of some 10 @ 15 cents upon each round lot inquired for, and it is generally agreed to without hesitation. The question of transportation will soon be a serious one with shippers of both Coal and Iron. Domestic Coal is already calling for an increased amount of tonnage, which the lines are obliged to partially at least concede. The increased transportation of cotton will absorb all the box-cars available, and the transporters of Pig-Iron will be obliged to fall back on gondolas to get their product moved and these are far from being plenty with the Southern lines. So far as prices are concerned, No. 1 Foundry is creeping up a few points above \$13 at the furnace banks, with the customary concessions on the different grades as they go down. Sales are being made only for deliveries in the near future, while inquiries for round lots running through monthly deliveries are rejected.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, September 11, 1889.

The event of the week was the voting yesterday by the stockholders of the Thomas Iron Company to sell its realty at \$3,500,000 to an English syndicate. This price does not include cash, stock on hand, bills receivable, &c., which, we are informed, aggregate \$1,700,000. Against this, however, \$400,000 must be charged, the amount of bonds outstanding. It is understood that those who have secured the option have made it a condition that B. G. Clarke, the present president, retain the executive management for at least three years. It remains to be seen, of course, whether the promoters of the scheme will be able to place the property with the English investing public.

American Pig.—Dealers and furnace agents report the placing of quite a number of round orders, chiefly for No. 1 Foundry; some of them cover delivery for four and six months to come. The market is strong and steady, yet a little incident which happened during the week

clearly shows that any efforts to force Iron on the market must still be accompanied by sacrifices. A lot of 300 tons of No. 2 Foundry of a well-known Alabama brand which had to be removed from the dock at Norfolk where it had lain for some time arrived here during the week. It was offered in vain at \$15, ex-ship, without finding a taker and was finally ordered into store. Quotations are as follows: No. 1 Anthracite Foundry, at tide-water, \$17 @ \$18; No. 2, \$16 @ \$17; Gray Forge, \$15 @ \$15.75; Southern No. 1 Coke Foundry, delivered at New York, \$16.75 @ \$17; No. 2, \$15.25 @ \$15.50; No. 3, \$15 @ \$15.25.

Spiegeleisen and Ferromanganese.—We do not hear of any business in Spiegeleisen. There is a demand for immediate delivery which cannot be filled, and nominally very high prices are asked. There is an order in the market for 3000 tons for shipment, but the buyer does not seem inclined to place it over \$29. Ferromanganese is selling in small lots up to \$63.50 for immediate delivery.

Billets and Slabs.—There is great scarcity, so that it is almost impossible to procure Nail Slabs, for instance, for early delivery. We understand that \$31 is named for delivery of Western Slabs at Nail mills in Eastern Pennsylvania.

Wire Rods.—A small business is progressing in the way of sales by Western Rod mills to Eastern Wire-makers on the basis of about \$42 @ \$43 on cars at the Rod mills. For foreign Rods \$46 has been bid for a small lot without leading to business.

Finished Iron and Steel.—The demand continues quite active. We quote as follows, on dock: Sheared Plates, 2.15¢; Universal Mill Plates, 2.20¢ @ 2.25¢; Angles, for the smaller sizes, 2¢ @ 2.10¢; for larger sizes, 2.25¢; Tees, 2.4¢ @ 2.6¢; Beams and Channels, 2.8¢. In Plates, Steel Tank is 2.3¢ @ 2.35¢ for $\frac{1}{4}$ inch or thicker and 2.45¢ @ 2.5¢ for thinner; Shell, 2.55¢ @ 2.6¢; Flange, 2.75¢ @ 2.8¢; Marine Steel, 2.8¢ @ 2.85¢; Fire-Box, 3.25¢ @ 3.75¢. For Bars we quote: Common, 1.6¢ @ 1.65¢; Medium, 1.65¢ @ 1.7¢; and Refined, 1.8¢ @ 2¢. Hoops, 2¢ @ 2.1¢; Galvanized Sheets, 65 ¢ and 5 ¢.

Merchant Steel.—The market is quiet, with Machinery at 2.15¢ @ 2.20¢; Tire, 2.20¢ @ 2.25¢; Toe-Calk, 2.35¢ @ 2.40¢.

Steel Rails.—Sales in moderate lots East and South figure up about 10,000 tons at \$28 at mill. In the West some small transactions are reported. The Western works, however, are very well supplied with orders up to the close of the year. The report of a sale of 10,000 tons at \$34, East St. Louis, half cash, half receivers' certificates, at par, is denied. We continue to quote \$28 @ 28.50 for standard sections at Eastern mill.

Old Rails.—The only transaction reported is the sale of 1500 tons American Tees from a road in this State at a price equivalent to \$25.50 in Western Pennsylvania. Foreign Old Rails are held here at considerably higher prices, varying from \$24 upward for Tees.

Scrap.—We note the sale of 100 tons prime selected American at \$23, and 100 tons of Hammered Axles at \$25. Mills in Eastern Pennsylvania are making inquiries for Scrap, which would indicate that their near-by supplies are exhausted.

The June volume of the "Transactions of the American Society of Civil Engineers" contains an interesting paper, by James G. Dagon, on some experiments on the strength of Bessemer steel bridge compression members, followed by a discussion by James Christie, of Pencoyd, and C. L. Strobel.

Financial.

Trade accounts from all quarters are good, based on excellent prospects for crops. Business is in augmented volume compared with any one of the last four years at a corresponding period. Exports and imports are both increased, but the latter in undue proportion. The forward movement of wheat and cotton from interior points to the principal trade centers shows a gratifying activity. Cotton is coming forward beyond expectations. One consequence is that the interior is well supplied with money. Railway and lake transportation lines, too, are pressed with freight, yielding a favorable return in net earnings. A Chicago report says this week promises to go on record as the heaviest in the amount of grain shipped since there was a lake marine, equal to 1,000,000 bushels a day. Crops in the corn belt have benefited from recent rains. The Illinois authorities put the probable corn yield at 200,000,000 bushels, against 278,000,000 in 1888. The coal trade is still slow and disappointing.

Stocks were active and generally strong, but at the close were irregular, owing to realizing sales. The coalers were prominent throughout. Delaware and Hudson sold at the highest price in their history. Reading was also a favorite, the earnings of the coal and iron company being favorably reported. News of frost as far east as Illinois affected the grangers, but prices were well supported. On Saturday the best prices were realized after the appearance of the bank statement. On Monday the only news was the announcement that the trunk-line companies have decided not to make any pro-rating agreement with the Western companies. T. B. Musgrave & Co. made a proposition to their creditors to pay 25¢ cash, 25¢ in one year and 50¢ additional within two years. A proposed consolidation of the Atchison Company's branch lines in Kansas and ultimately of the whole system was reported from Boston. On Tuesday the market was weak, but steady at the close.

Government bonds were firm. Quotations as follows:

U. S. 4½s, 1891, registered.....	105½
U. S. 4½s, 1891, coupon.....	105½
U. S. 4s, 1907, registered.....	127
U. S. 4s, 1907, coupon.....	128
U. S. currency 6s.....	118

Railroad bonds were strong and active, with a good demand. The posted rates for bankers' sterling are \$4.85 for 60-day and \$4.88½ for sight. The market is firm.

The money market ceases to be a disturbing factor, supplies being abundant. There was a fair demand for time loans. Rates are 4% for 30 to 60 days on prime and 4½% on good mixed collateral, and 5% for four to six months on prime and 5½% for good mixed. Commercial paper is in fair supply, and is taken freely by out-of-town institutions, some of our city banks buying moderately. The best double-name paper sells at 5½% @ 6% and prime single-name at 6 @ 7%. The bank statement of last week showed a gain of \$4,629,800 cash and of \$3,336,600 in surplus reserve. The value of the recent Treasury operations consists not alone in the amount of money that is released by the Government, but also in the effect upon money-lenders, who as long as the prospects for stringency were good were inclined to hoard their resources, or at least simply lend their funds in Wall street on call. In consequence the mercantile community has had much less difficulty in securing the accommodation it has needed. It is accepted as a fact in Wall street that the President will not call an extra session of Congress.

The total foreign imports for the week were \$9,754,000; total since January 1, \$350,562,000—an increase of \$25,400,000 compared with last year. Exports for the week were \$7,985,000; total since January

1, \$238,293,000—an increase of \$38,400,000 compared with last year.

The Interstate Commerce Commissioners meet in this city to-day to consider the case of the Poughkeepsie Iron Company vs. the Boston and Albany Railroad for alleged discrimination; also other important points.

The International Monetary Congress, which is to meet in Paris on September 14, is to be held under the auspices of the Minister of Commerce, Industry and the Colonies.

Estimates of the loss by the Antwerp fire vary from \$5,000,000 to \$7,000,000.

The bank clearings of 43 cities last week show an increase of 11.2% compared with last year; outside of New York, 2.7%. New York increased 16.5%; Boston, 1.4%; Philadelphia, 1.6%; Chicago, 0.4%; San Francisco, 4%; Cincinnati, 8.7%; Milwaukee, 17.2%; Denver, 50.1%; Omaha, 29.9%; St. Paul, 5%; Indianapolis, 26.4%. For August the clearings of 43 cities were \$4,302,017,066, an increase of 11.4%, and for the first eight months of the year those of 42 cities \$36,064,415,928, an increase of 15.5%. Business failures for the week were less than during either of the last two weeks. Included in the number are the Douglas Axe Mfg. Company, of Boston, and a failure in the hardware trade in New York.

In breadstuffs there is a heavy feeling and in some instances lower prices, there being a disposition to work off old stock. Holders of wheat are more urgent to offer sales, with orders scarce and cables weak. Corn is about steady. In Austria and Hungary prices are higher. There is a fairly active movement for export. Coffee has a good tone under steady demand. Cotton is firmly held, with a free movement from plantations and at the several ports. Leather is strong, receipts being promptly absorbed. Jute firm, but inactive. Provisions are steady; trade on export account very moderate. Sugar is firm, without important change in prices. The burning of one of the trust refineries in Brooklyn had no influence. Cottonseed-oil is wanted for the Mediterranean, because of the light crop of olives. Business in dry goods is on a large scale with jobbers, the week being one of the most active on record. The market was full of buyers for retail from distant sections, particularly from the Western and Southwestern sections. The buoyant condition of trade over the whole country is attributed to good crop prospects. A flannel and blanket auction sale realized fair prices. Full freight rates have been paid for cotton room to Liverpool, in one instance the highest for years.

Metal Market.

Copper.—Since our last week's report the London market has been easier, spot Copper giving way from £42. 15/ to £42. 10/ last night, and futures from £41. 15/ to £41. 10/, sales aggregating 1000 tons. The final collapse of the combination on this side at length restores the metal to the legitimate influences of the demand and supply, and, while unsettling values for the moment, creates a drooping tendency all the more pronounced as consumers are seemingly determined to hold back as much and as long as possible, while the one or the other large producer or holder evinces an inclination to accept low figures on the spot or for forward delivery. We treat the subject editorially in another column. The demoralization prevalent causes unsettled values, which were nominally 11¢ @ 11½¢ for Lake on the spot last night, and 9½¢ @ 10¢, cast ing brands. Toward the close to-day not more than 10¢ could be got for Lake on the spot, while casting brands are entirely nominal.

Tin.—Spot Tin improved for the week from £90 in London to £91, and futures, from £91. 12/6 they stood last Thursday, gave way, on the other hand, to £91. 5/; sales 400 tons. A successful corner has been engineered in our midst, assisted by the London strikes, which prevent fresh supplies coming from there. September was pushed to 22¢, and numerous transactions took place, the market easing off slightly toward the close, 20 tons spot selling at 21.85¢ @ 21.90¢, 10 tons September at 21.40¢, 10 tons October at 20.40¢, and 20 tons November at 20.45¢ @ 20.25¢, closing at 20.20¢. Spot Tin closes at 21¢ @ 21½¢ to-day, and futures 2¢ below this, after sales on 'Change of 10 tons spot at 21.25¢; 10 at 21¢, and 10 at 20.9¢. **Tin-Plates.**—There is a moderate demand for Tin-Plates, but not to the extent it should be at this season of the year. Dealers are selling from stock at a very liberal advance on old prices, but for future contracts they are asking about 10¢ per box higher. The indications from the other side are that the market over there is not quite so firm, as contracts running into March, 1889, can be placed at a little under extreme figures. We quote large lines, ordinary brands, per box: Siemens-Martin Steel, Charcoal finish, \$4.75 @ \$5.50; Coke finish, \$4.60 @ \$4.65; Ternes, \$4.12 @ \$4.30; Coke Tins, \$4.30 @ \$4.40, and Wasters \$4.12½ @ \$4.15.

Lead.—Some 300 tons have been sold to speculators at 4.05¢ @ 4.10¢, but since then 50 tons spot were forced off at 3.95¢, by parties wishing to depress the price. At a late Cabinet meeting it was resolved to leave the decision in the Mexican Lead-Ore question to Secretary Windom, who has the matter still under consideration, pending which consumers are not prepared to pay even 4¢.

Spelter.—Continues dull but firm at 5.15¢ @ 5.20¢, with very little business transacted. Silesian having advanced to £22. 10/ in Europe, has now to be quoted 6½¢ nominally; it costs that much to lay it down here.

Antimony.—Cookson sells to a moderate extent at 19¢, and Hallett's at 17¢ @ 17½¢; the demand is steady and the market bare.

New York Metal Exchange.

The following sales are reported:

THURSDAY, September 5.	
35 tons Tin, September.....	20.50¢
20 tons Tin, October.....	20.15¢
FRIDAY, September 6.	
10 tons Tin, September.....	21.00¢
SATURDAY, September 7.	
10 tons Tin, September.....	21.40¢
MONDAY, September 9.	
10 tons Tin, September.....	21.75¢
10 tons Tin, September.....	21.65¢
30 tons Tin, September.....	21.60¢
10 tons Tin, September.....	22.00¢
TUESDAY, September 10.	
10 tons Tin, October.....	20.40¢
10 tons Tin, November.....	20.45¢
10 tons Tin, spot.....	21.90¢
10 tons Tin, spot.....	21.85¢
10 tons Tin, September.....	21.40¢
10 tons Tin, November.....	20.25¢

Coal Market.

The quietness of the several Coal agencies in this city in contrast with the bustle usually observed at this season of the year is a striking feature, significant of the changed conditions of trade. For reasons not immediately apparent consumers are not sending in their orders to the extent desired; hence the disappointment and failure to realize the prices hoped for. In explanation it is remarked that a year ago buyers overloaded, and the surplus still operates as a clog. Moreover, the menace of higher prices is no longer effective, like the old familiar cry of "wolf, wolf!" when in fact no such animal is in sight. Attention is also called to the fact

that during the recent warm months extraordinary economies have been brought about by the more general introduction of oil and gas stoves, thereby reducing consumption to a minimum. The consequence is weak prices, Stove being quoted at \$4 @ \$4.40 alongside, varying according to quality. Pea is \$2 @ \$2.40, f.o.b. Compared with a week ago there is not so much Coal afloat in the harbor, which helps to stiffen. The mill and furnace demand is heavier. The Reading Company are reported to have been stocking Chestnut and Pea Coal near Mahanoy. It is not expected that there will be any restriction needed in October, but the trade will take any action that is necessary.

The reported Anthracite Coal production for the week ending 7th inst. is 705,700 tons, a reduction of 60,000 tons compared with the previous week. New Jersey Central reduced 30,000 tons, Reading and Lehigh each about 10,000 tons, indicating harmony of action.

The Bituminous Coal is active at unchanged prices. Shipments at the mines are delayed by the lack of cars, of which it is said many have been diverted to the Coke trade, where transportation is more profitable. Additional cars recently ordered by the Pennsylvania road will afford needed relief. The Coke trade is reported to be booming and the demand for that class of fuel is said to largely exceed the production. It is officially announced that the price of Coke will be advanced \$1.50 per ton on October 1. Vessel freights have declined.

The Pennsylvania Railroad Company have plans for four new piers at Philadelphia, designed, as supposed, for the Eastern trade. The Reading Company, too, are about to establish an immense storage depot in connection with the Port Richmond yards. The Pennsylvania, Poughkeepsie and Boston will open a direct route from the Anthracite Coal fields to New England, via the bridge, next week, and the Lehigh and Hudson complete their connection with the bridge this month.

Imports.

Hardware, Machinery, &c.

Auffmordt, C. A. & Co., Mach'y, cs., 4
Barbour Bros. & Co., Mach'y, case, 1
Boker, Hermann & Co., Arms, cs., 48; Mdse., cs., 11
Clark, G. A. & Bro., Mach'y, cs., 54
Corbiere, Fellows & Co., Mach'y, cs., 2
Davis, Moses, Arms, cs., 2
Downing, R. F. & Co., Mach'y, pkgs., 2
Folsom, H. & D. Arms Co., Arms, cs., 4
Field, Alfred & Co., Mdse., cs., 8; Arms, cs., 23
Graef Cutlery Co., Cutlery, cs., 6
Hartley & Graham, Arms, cs., 58
Hammacher, Schlemmer & Co., Nails, cs., 40
Higginson Mfg. Co., Hammers, case, 1; Plows, pkgs., 5
Lau, J. H. & Co., Arms, cs., 6
Merchants Despatch Co., Arms, cs., 10
Newton & Shipman, Files, cks., 3
Sheldon, G. W. & Co., Mach'y, cs., 10; Ironware, cs., 10
Schoverling, Daly & Gales, Guns, cs., 23
Schroeder & Bro., Mach'y, bxs., 4
Taylor, Thos., Mdse., cs., 2
Thebaud Bros., Mach'y, pcs., 2; pkgs., 41
Tryon, E. K. Jr., & Co., Arms, cs., 25
Ward, James E. & Co., Mach'y, cs., 8
Wyman, Chas. H., Arms, cs., 20
Werlemann, H., Arms, cs., 38
Wiebusch & Hilger, Lim., Mdse., cs., 14; Arms, cs., 12
Witte, John G. & Brother, Needles, case, 1
Order, Hdw., cs., 8; Pots, 75; Steel Rollers, 20

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, September 11, 1889.

The Block-Tin market has been in unsatisfactory position, owing to manipulations, and speculation, outside of a limited circle, has been small. Prices declined to £90 for prompts, but subsequently re-

acted to £91. 10/, owing to expectations that shipments from the Straits and Australia will be small, and the stocks here show a marked decrease after the expiration of the strikes. From the highest price reached during the week there has been a decline of £1, and sales were made to-day at £90. 10/ for prompt.

Copper is looking rather weaker. The demand for furnace material and for manufactured Copper is slackening, and smelters, who recently bought heavily, will probably soon be active competitors with other producers and holders of spot stock. In fact, there are already some indications of such competition being felt, and cash warrants are now quite plentiful. Arrivals of Chili Bars in France are freely pressed for sale. Business has been done in this market at a decline of 15/ on prompt and 10/ on futures, the former selling at £42. 10/.

In Pig-Iron there has been a good trade for consumption and export, but speculation is hesitant and holders of warrants seem more inclined to sell. Makers look for higher prices, however, but await a realization of this before blowing in more furnaces. Special brands continue noticeably strong and some are held at a further advance. The exports to the United States last month were 12,000 tons, against 10,000 tons during August, 1889.

The Magnetic Iron Mountain Smelting Company have stopped work and will go into liquidation.

Tin-Plate has been quite active, some large purchases having been made at inside prices, chiefly for account of San Francisco and colonial markets. The demand from other American points has been moderate. The new Ashburnham works, at Burryport, will be started up during November with three mills. The exports to the United States during August were 27,000 tons, against 29,000 tons last year.

The local market for Old Material is following the course of the American market, but only a moderate trade passes.

The Belgian rolling-mill syndicate have advanced export prices 5/ all around.

Scotch Pig.—The market has continued active, but apart from 2/6 advance on Summerlee prices show little change:

No. 1 Coltness, f.o.b. Glasgow	64/
No. 1 Summerlee, " "	62/6
No. 1 Gartsherrie, " "	60/3
No. 1 Langloan, " "	59/6
No. 1 Carnbroe, " "	52/
No. 1 Shotts, " at Leith	59/6
No. 1 Glengarnock, " Ardrossan	56/
No. 1 Dalmeilington, " "	50/6
No. 1 Eglinton, " "	48/6

Steamer freights, Glasgow to New York, 4/; Liverpool to New York, 10/.

Cleveland Pig.—Business has been less active, but prices remain steady. No. 3 Middlesborough quoted 43/9, prompt.

Bessemer Pig.—In this line there continues to be a brisk trade, and the market is strong, with prices 2/ up. West Coast brands, mixed numbers, 57/6, f.o.b. shipping point.

Spiegeleisen.—There is still a free demand and prices are firm. English 20 % quoted 82/6, f.o.b. at N. W. England shipping point.

Steel Rails.—An active demand continues, and the market strong, with makers asking 5/ advance. Heavy sections quoted at £5. 5/ and light sections £5. 10/ @ £6. 5/, f.o.b. at N. W. England shipping point.

Steel Blooms.—The market firm at a slight advance and fairly active. We quote £4. 10/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Makers ask 5/ advance, and the market is strong. Bessemer, 2½ x 2½ inch, £4. 17/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—The demand for these continues moderate. Bessemer, £4. 10/, f.o.b. at N. W. England shipping point.

Old Rails.—Holders ask higher prices, but few sales are making. Tees quoted at £3. 15/ and Double Heads £3. 17/6, c.i.f., New York.

Scrap-Iron.—There is little doing, but prices remain firm. Heavy Wrought quoted £2. 5/ @ £2. 7/6, f.o.b.

Crop Ends.—But little doing and prices unchanged. Bessemer quoted £2. 15 @ £2. 17/6, f.o.b.

Tin-Plate.—The market firm, but demand irregular. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	15/3 @ 15/6
IC Bessemer Steel, Coke finish	13/6 @ 13/9
IC Siemens	13/9 @ 14/
IC Coke, B. V. grade	13/1½ @ 13/3
Charcoal Terne, Dean grade	12/ @ 12/6

Manufactured Iron.—There is a good business in most lines and prices remain firm. We quote, f.o.b. Liverpool:

Staff, Marked Bars	£ s. d. @ £ s. d.
Common	8 10 0 @ 8 15 0
Staff, Bl'k Sheet, singles	7 0 0 @ 7 2 6
Welsh Bars (f.o.b. Wales)	6 12 6 @ 6 17 6

Copper.—Rather more business doing to-day at steady prices. Merchant-Bars quoted at £42. 15/, spot, and £41. 10/, three months' futures. Best Selected, £48.

Tin.—The market rather weaker under free offerings. Straits quoted at £90. 10/, spot, and £91. 15/ for three months' futures.

Spelter.—Supplies sparingly offered and market very firm. Quoted at £22. 5/ for ordinary Silesian.

Lead.—A moderate business at steady prices. Quoted £12. 12/6 for Soft Spanish.

Foreign Markets.

EQUIVALENTS.

	Cents.
Franc, Peseta or Lira	19.3
Florin (Netherlands)	40.2
Florin (Austria)	35.1
Wilels (Portugal)	1.08
Wilels (Brazil)	54.8
Mark (Germany)	33.8
Kilogram	2.205
Picul	134

EAST INDIES.

MANILA, September 3, 1889.—*Hemp.*—The market is firm at \$14 @ picul, against \$10 same date last year, equaling 7½ ton, cost and freight, £45, against £33. 4/. Clearances for the United States since last cable amounted to 8000 bales, against 7000 last year. Since January 1 they reach 152,000, against 109,000, and to England 194,000, against 243,000; loading for England 25,000, against none; cleared for all other ports 32,000, against 51,000; receipts at all ports since last cable 10,000, against 14,000, and since January 1, 396,000 bales, against 399,000 in 1888 and 334,000 in 1887. *Freight.*—\$5, against \$6. *Exchange.*—Six months' sight on London 3/5½, against 3/5.—*Ker & Co., per cable direct to their agent in New York, Mr. Charles Nordhaus, 89 Water street.*

COLOMBO, July 25, 1889.—*Plumbago.*—Is in good demand and scarce. We quote toward the close in rupees, 7½ ton: Large lumps, 145 @ 170; ordinary ditto, 125 @ 160; Chips, 80 @ 95, and Dust, 40 @ 65. Since October 1 shipments have been distributed as follows: To England, 129,032 cwt.; to Venice, 102; to Hamburg, 7419; to Antwerp, 12,642; to Bremen, 1254; to Holland, 457; to India, 159; to Australia 392, and to the United States, 126,435; to

gether, 277,852, against same time last year 207,460; 186,273 in 1887, and 149,958 in 1886. *Exchange*.—Six months' sight 1 1/4%.—*Volkart Bros., Ceylon and Malabar Coast, through their agent in New York, Mr. John W. Greene, 82 Wall street*

SPAIN.

BILBAO, August 17, 1889.—*Iron Ore*.—A few single cargoes were sold during the week at 8/3 @ 8/6, Campanil and 7/1 @ 7/4 Rubios Superiores. Shipments were light, not exceeding 57,184 tons. August 24.—Sales have again been restricted to a few cargoes at unaltered rates. Vessels continue scarce. *Pig-Iron*.—The export was 1653 tons, while 630 tons went coastwise. Total Ore export since January 1, 2,542,051 tons, against 2,494,122 in 1888.—*Bilbao Maritimo y Comercial*.

GERMANY.

HAMBURG, August 31, 1889.—*Iron*.—The Rhenish-Westphalian market has continued tending upward, the demand being as brisk as ever for most goods. The advance is precipitated by dear Coal and Coke, and under such circumstances owners of blast-furnaces decline naming a price for forward delivery of their product. Spiegel remains steady at 70 marks. The raised quotations for Pig are the following: Forge Pig, 55 @ 71; White Steel, 64; German Bessemer, 66; Thomas, 56. Rolling-mill products enjoy both a good local and improving export demand. Many works sold all they can turn out till next year, and they require six to eight weeks for delivery. The position of Iron is such that it encourages the belief that we shall have a lively business not only in the fall, but all through the winter. Every branch is actively and remuneratively engaged, except perhaps in the Pipe-casting department. The Government orders for rolling-stock are heavy. Wire Rods may be quoted 125 @ 127.50; Steel Rails, 130 @ 135. Upper Silesia reports as brisk a trade as Rhenish-Westphalia. *Spelter*.—The shipments from Breslau and other points in Silesia continue on a large scale at hardening figures.—*Borsenhalle*.

BELGIUM.

BRUSSELS, August 31, 1889.—*Iron*.—An active demand prevails in the Belgian markets for all sorts of Finished Iron; the continued advance does not deter consumers from submitting to current figures. Beams gradually follow suit. The rolling-mills turning out Plates and Sheets find it difficult to attend to all the commands dropping in. Cockerill has just made a contract to deliver Steel Rails for Cuba at 125 francs $\frac{1}{2}$ ton, free on board at Antwerp.—*Moniteur des Intérêts Matériels*.

A Letter-Stamping Machine.—A letter-stamping machine is now on trial at the Post-office in this city, which, in the opinion of those who have watched its work, has solved a most difficult problem in the handling of postal matter. The number of letters stamped by operators using a hand-stamp in connection with an inking-pad is about 60 a minute, or 3000 an hour. The maximum rate of the new machine is 500 per minute for letters of uniform shape and thickness, while with general mail matter, including letters of different sizes and postal-cards, the actual work is but little less. For the busy portion of the day its record is 24,000 letters an hour. The device is little larger than a sewing-machine, and a small dynamo furnishes the motive power. The operator feeds the letters in quantities into the "hopper" of the machine, where they are seized by a system of feed-rollers, which pass them one by one, but with great rapidity, to the printing-die. The mechanism of this automatic feed-bed and stamping device consists of a belt, which forms the moving bottom of the "hopper" and carries the letter against the system of rubber wheels or feed-rollers. The wheels on the right of the path of the letters revolve swiftly toward the printing-roller, while those on the other side of that course turn slowly in the opposite direction. The letters are thus separated and sped quickly forward one at a time to the printing-die, which is self-inking and normally out of the path of the moving mail matter, and which is controlled by a lever in that path. Each letter in its passage along the feed-bed of the machine strikes this lever,

which instantly brings the printing-die into contact with the envelope, canceling the stamp and imprinting the post-mark.

A Western View of Trade Relations.

Commenting upon the indifference manifested in Western financial circles over the recent threatened stringency in the money market, which was regarded as a very important matter in the East, the *Chicago Tribune* says:

There is more than one reason why the West is losing its old dependence upon the East. The industries of the country have for two years been subject to an influence that has materially changed the direction and manner of the country's development. This new influence is an artificial one and is exerted by the Interstate Commerce law. Before the enactment of that law the East had more than a fighting chance for the preservation of its monopoly of manufacturing, and Eastern wholesalers and jobbers felt pretty confident that their business was bound to keep step with the growth of the whole country. So long as railroads charged only a nominal rate for a long haul, bringing the products of Eastern mills into the West for a song, manufacturing capital clearly had no general inducement for coming westward. The practical effect of railroad rebates was to place consumers at the doors of Eastern mills. The tendency, therefore, was strong toward the concentration of the country's manufacturing interests in the Eastern States.

The Interstate Commerce law, by its short-haul clause, has thoroughly revolutionized this tendency, and if this clause is not repealed the East cannot long preserve its ascendancy in manufacturing or trade or finance. The effect of the law upon transportation charges has been so magnified by the clamor of the railroad companies against it that this other more important effect has never yet been brought prominently into public notice. Railroad managers are the only men who as a class have had an opportunity to note the industrial effects of the law, and they naturally have not been eager to make public the results of their observation, not wishing to increase the popular favor with which a law odious to them is regarded. But it is a fact oft noted and commented on among railroad men that new manufacturing and jobbing centers are springing up all over the West and South at an unprecedented rate. The law is scattering capital just as the old methods tended to concentrate it. The country is gradually being divided into commercial and industrial districts, each largely independent of all the others and each producing a large measure of all the articles needed for its consumption. The ultimate effect of such changes upon the country's trade and development is most important and is not difficult to foresee. Its first effects have been to lessen the financial and commercial prominence of the old Eastern centers. Not until the next census is taken will it be possible to do more than indicate the results of the law in a general manner, but it may be confidently expected that one of the most striking discoveries of the census-makers will be the new industrial and financial importance of Western and Southern trade centers. Sections of the country given over entirely to agriculture years ago will be found giving employment to labor in a diversity of industries. Eastern manufacturing centers, on the other hand, will probably be found not to have maintained the rate of progress established in the former decade. All these changes, which have been helped along incidentally by the opening of natural-gas wells in Western States, have an important bearing upon present financial and commercial conditions. They

furnish additional reasons for the West's growing independence of Eastern money markets. The farmer is no longer the only nor the best customer of Western bankers, and the old cycles of dullness and activity recurring among money-lenders with the regularity of the seasons promise soon to exist only in the history of Western financial operations. The paper of manufacturers and jobbers is fast becoming an important commodity in the banks of all the Western cities. Hence the West is calling less and less upon the East for the funds with which the farmer is paid for his crops and is growing less sensitive each year to the conditions that prevail in Eastern money markets.

J. H. Sheadle, secretary of the Mahoning Valley Iron Manufacturers' Association, has just issued a "Statistical Abstract," showing the tonnage from July 1, 1888, to July 1, 1889, of the mills and furnaces embraced in the association. For the period named the items are as follows:

	Tons.
Rolling-mill shipments.....	222,618
Rolling-mill receipts.....	532,624
Blast-furnace shipments.....	326,370
Blast-furnace receipts.....	1,352,245
Total.....	2,433,857

A recapitulation of these figures shows that the mills furnished 755,242 tons and the furnaces 1,678,615 tons, of which 1,884,869 tons were incoming and 548,988 tons outbound freight. The total volume of tonnage as indicated by these figures shows a marked increase over last year, the movements of incoming and outgoing freight aggregating 2,433,857 tons, against 2,097,655 tons for the preceding year, an increase of 16 per cent.

The Milwaukee Car Wheel and Foundry Company are about to put up a plant in Milwaukee, Wis., near North Avenue Station on the C., M. and St. P. Railway, for the purpose of manufacturing car-wheels and doing a general foundry business. The plant will consist of two buildings, each 80 x 145 feet, one for a car-wheel and the other for a general foundry, also a building 60 x 72 feet as a cleaning and shipping room. Wheels will be manufactured in the Barr contracting chill under the Barr patents, and the capacity will be 160 wheels per day. The company have been organized with a capital stock of \$90,000, and with the following officers: D. C. Green, president; S. M. Green, vice-president, and Gustave Scholle, secretary and treasurer. The works will be in operation by November 15.

The formal opening of the grand coal palace built entirely of blocks of Sangamon County coal on the fair ground at Springfield, Ill., took place on Tuesday with interesting ceremonies. The programme included an address on "Coal in Commerce," by United States Senator Shelby M. Cullom; an address on "Coal Miners," by Pat Donnelly, late secretary of the Illinois Miners' Protective Association; an address on "The Coal Consumer," by Clinton L. Conkling, president of the Springfield Board of Education, and on "Coal in Manufactures," by Charles Ridgely, president of the Springfield Iron Company and president of the Consolidated Coal Company of St. Louis; another on "Coal Statistics," by Col. John S. Lord, secretary of the Illinois Bureau of Labor Statistics.

Charles H. Field, surviving partner of the firm of Guy C. Hotchkiss, Field & Co., of which the late Maurice B. Flynn was a member, who assigned to James Martin, filed schedules showing liabilities as \$360,586.45. The nominal assets are \$389,444.86 and actual assets \$42,300.79.

Hardware.

There continues to be a good volume of business, which remains without special feature, prices as a rule being unchanged, with a slight tendency, however, in heavy goods toward greater firmness. Many manufacturers and merchants refer to the volume of trade as being in excess of last year, but others do not give quite so favorable a report. From many of the interior points reports are very satisfactory.

Cut Nails.

In spite of the rise in raw materials, notably in Soft Steel, Cut Nails in New York have not gained materially in strength, the price remaining \$1.80 to \$1.85 for carload lots on dock.

Miscellaneous Prices.

The market for Wrought-Iron Pipe is in excellent condition and characterized by a gratifying firmness and regularity. The manufacturers are apparently anticipating an advance at an early day. The mills are, with scarcely an exception, fully occupied on orders.

No understanding has been reached by the manufacturers of Grain Cradles and Snaths, and it is understood that the market is now an open one. It is thought probable that under these circumstances and with the active competition which is expected prices will rule exceptionally low during the coming season.

Sisal and Manila Rope remain the same as at our last report, the market being regarded as still weak and buyers holding off.

The Strap and T Hinge market continues low and irregular, and some of the leading Western jobbers are making lower quotations than heretofore to the retail trade.

Prices of Tacks, Brads, &c., are without material change, but in the animated competition that exists there is a disposition to revise discounts frequently so as to make the prices on the different kinds correspond with the condition of the market. Thus there is on Carpet Tacks an increasing tendency toward the naming of different discounts on the Tinned and the Blued goods. In some lines some manufacturers have recently made advances beyond the unprofitably low figures recently ruling.

The combination existing between the manufacturers of Wire Bale-Ties is regarded as working satisfactorily, prices not having been unreasonably advanced. Their method of quantity discounts, covering a comparatively wide range, is referred to as meeting well the views of the trade.

The Gem Thermometer Sad-Iron, a description of which is given on page 427, is put on the market by L. Waterman, 312 and 314 Grand avenue, Milwaukee, Wis. Of this Iron the following sizes are made, the prices given being subject to a discount of 25 per cent.:

No. 1, for family use, 5 pounds.....	\$3.25
No. 2, for family and seamstress, 7 pounds.....	3.50
No. 3, for custom tailors, 15 pounds.....	4.75
No. 4, for shop tailors, 18 pounds.....	5.00

At a meeting of the Association of Spring-makers the action of the manufacturers at their August meeting, by which the price of Elliptic, Concord and Platform Springs was reduced to 60 and 10 and 10 per cent. discount, four months, or 3 per cent. additional discount for cash, was affirmed. Action was also taken in regard to quantity discounts. It was also agreed to adhere strictly to the established

prices on Tinken's Springs, in which the discount in lots of from 1 to 100 sets is 40 per cent. The association were further strengthened by an accession to their membership, so that, we are advised, they now include all the Carriage-Spring makers in the country.

It is understood that the manufacturers of Heavy Hammers and Sledges will hold a meeting at an early date, when the question as to the continuation of the combination will receive attention. There are indications pointing to the probability that it will not be considered feasible to do so.

Freight Classification.

The matter of classification is one of not a little difficulty, and shippers who are directly interested are sometimes disposed to take an unreasonable position in regard to their own goods. It is to be borne in mind that the carrying of merchandise is with the railroads a matter of business, in which they expect to make money. Shippers, apparently, sometimes forget this and express themselves as if it were the duty of their roads to carry their goods at such charges as will enable them to meet the most distant competition, without great regard to the profit accruing to the carriers. This is manifestly unreasonable, and appeals to the roads based on such grounds will presumably be disregarded. If it is shown that a certain line of goods is given a classification which is too high in comparison with other similar goods it may have some influence in securing a revised classification, but as a general rule shippers should base their appeals for a lower grading of their goods on an argument showing that increased business and larger profits will result to the railroads in case the desired change is made. This is a business consideration which will always have weight with classification committees. In many cases the facts would justify the manufacturer in taking this position, for it frequently happens that his business is seriously curtailed by his inability to meet the competition of other makers, and as a result his shipments are diminished, if they are not, as in some cases, entirely suspended. Bringing such facts to the attention of the proper authorities will in most cases secure a modification of the classification which will be to the mutual advantage of both parties.

There is often on the part of railroads a disregard of their own and their customers' interests in this matter, but inquiry develops the fact that in very many instances reasonable changes have been made when carefully prepared and well-authenticated facts and figures which justified them have been duly presented. There are, indeed, many complaints of the indifference of roads to the interest of shippers, but some of these complaints are probably without solid foundation, and over and against those which are well founded must in fairness be set the many instances in which grievances have received careful attention, modifications in the classification being made to meet the requirements of the case. The recent making of Hardware third instead of second class, as in the trunk line classification No. 6, certainly shows a disposition to meet the views of Hardware manufacturers and advance as far as may be their interests.

We are also in receipt of letters from shippers who are dissatisfied with the

present grading of their goods, in which they express the confidence that they will be enabled to secure desired changes, referring to the careful consideration which is being given to their appeals. The following letter from an influential New England manufacturing company illustrates this point, while it also calls attention to the lack of agreement as to carload weights, a matter to which other correspondents have already alluded, as one which entails not a little inconvenience and irregularity, and might with advantage be rectified:

Referring to the subject of freight classification, discussion of which is now going on in your valuable journal, we would say that the railroads, being interested in the net results, have no inducement to lower the classification of an article unless it can be shown that thereby, owing to increased volume or longer hauls, their net profits will be increased. Whether their customer is a Western or an Eastern manufacturer is immaterial to them; so that the Eastern manufacturer to obtain a lower classification must show the transportation companies a larger profit resulting therefrom. In our own case, on one of our specialties, the raw material is brought from the West, manufactured into finished goods, and then re-shipped to the West. A lowering in classification which would permit our successful competition with Western manufacturers was shown to be a positive benefit to the transportation companies, and a reduction of classification was obtained.

We are glad to note that General Hardware has been lowered to third class, and the thanks of the trade are due to *The Iron Age* for accomplishing this. We trust you will go on in the good work and obtain other reforms, among them the lowering of the minimum carload weight by the Eastern railways from 24,000 to 20,000, as rated by the Western companies.

Business Troubles.

The news of the disappearance and reported defalcation of Denison D. Dana, treasurer of the well-known Douglass Axe Mfg. Company, East Douglass, Mass., and 274 Purchase street, Boston, and the assignment of the company, caused a great sensation in business circles, the prominence and apparent prosperity of the company and their wide connections, and the confidence and high esteem in which their treasurer has been held, made the news of their embarrassment from such a cause to be a complete surprise. The company had been in good condition financially, as appears from the following statement, which was made at the last annual meeting of the corporation, July 18:

Liabilities.	
Capital stock.....	\$400,000.00
Debts.....	121,124.04
Balance profit and loss.....	11,768.80
Total.....	\$532,892.84
Assets.	
Land, water-power and buildings.....	\$169,380.00
Machinery (estimated).....	50,000.00
Cash and debts receivable.....	106,518.54
Manufactures, material and stock in process.....	206,994.30
Total.....	\$532,892.84

The extent of their loss through the defalcation of Mr. Dana is not definitely announced, but it is thought that it will reach to nearly \$300,000, so that the company are said to be financially wrecked. Mr. Dana has been with the company for many years and was brought up with it from boyhood, and not the least suspicion had been entertained regarding his integrity. The corporation were organized in 1834 with a capital of \$400,000. They

have done a large business, which was formerly very profitable, and have had a large export trade, where their Axes have had for many years an enviable reputation and have been in many markets standard goods. Of late years it is probable that increased competition materially reduced their profits, but their business has continued large and profitable.

Connected with the embarrassment of the Douglass Axe Mfg. Company is the assignment of Wm. M. Caldwell, 106 Chambers street, New York, on Monday last, to James K. Caldwell. Mr. Caldwell was the agent in this city for several years of the Douglass Axe Mfg. Company, a position that he relinquished a few years ago when Mr. Dana's son, Richard, became the head of the firm of R. H. Dana & Co., 25 Beaver street, New York, to whom the business was transferred. Mr. Caldwell continued to have, it is stated, large transactions with the company and intimate relations with the president and treasurer, so that he freely indorsed the company's paper. This liability is understood to be the cause of his embarrassment.

Items.

We are advised by John Chatillon & Sons, 85, 87 and 89 Cliff street, New York, that they have recently received a number of letters from butchers in the West saying that a party had called on them, representing himself as their agent, and had taken orders for their goods. They do not, however, send any one out to canvass for retail trade, and desire us to warn the trade against the fraud which is thus being perpetrated by the party in question.

Energy Mfg. Company, 1115 to 1123 South Fifteenth street, Philadelphia, Pa., have issued a new price-list describing their varied line of patent Portable Rope Hoisting-Machines. Of these a number of patterns for various uses are illustrated and described, together with their Friction-Driven Center-Grinder, Clamping-Blocks, Drill-Guide and Steady Rest, &c. In their introductory circular they allude to the Hoisting-Machines as not simply self-sustaining Tackle-Blocks but lifting-machines, made and proportioned so that one man can lift the full capacity that the machine is built for. They also emphasize the fact that the machines use rope, and allude to the advantages they thus possess over machines using chain. New designs are being added constantly.

Surpluss, Dunn & Alder, 97 Chambers street, New York, are about adding to their important line of agencies others relating to well-known goods, which will give them an exceptionally complete line, including many staple goods and some specialties. They report business as very satisfactory.

The trade will observe on page 61 the striking advertisement of Henry Diaston & Sons, Philadelphia, Pa., in which they illustrate their patent Chisel-Point Circular Saw, with separate cuts showing the different patterns of chisel-point teeth.

Staver & Walker, Portland, Ore., issue printed matter in striking form calling attention to their extensive line of Farm Machinery, Implements, Electric Light Machinery, Engines, Boilers, Wagons, &c. A map is given of the Pacific Coast country and special reference made to Oregon, the "Queen State of the Northwest," and to Washington, the "Great New State of the Northwest."

American Needle and Fish Hook Company, New Haven, Conn., for whom Alford & Berkele Company are agents, 77 Chambers street, New York, announce that they will make prices on Fish-Hooks this year that will make it out of the question for the trade to give importation

orders. They are pushing actively in the sale of these goods, and we understand are offering attractive inducements in the way of price.

The Bissell Carpet Sweeper Company, Grand Rapids, Mich., have issued an elegantly printed new catalogue, in which they give description of their large and interesting line of Carpet-Sweepers. The special features of these goods are described, with illustrations of the different patterns.

Horton, Gilmore, McWilliams & Co., Chicago, Ill., have issued their fall circular No. 1. It has 20 pages, which are devoted to metals and seasonable specialties, in which Stove-Boards, Coal-Vases and miscellaneous goods in the Stove line are given a prominent place. Corn, Hay and Straw Knives, Corn-Huskings, &c., are also shown and a number of other lines. The business situation and the enterprises of the house are thus referred to:

Business Prospects.—Business is booming, and at present rate of demand there will be a scarcity of goods in some lines before the fall trade is fairly opened. At present the stocks are complete and prices low, but the whole situation may be changed within the next 30 days. The Iron and Steel markets have advanced enough to stiffen prices of staple goods, and everything indicates that fall stocks should be bought early.

Our Success.—We have met with unprecedented success thus far, and thank the dealers of the Northwest for the prompt response which they have given to our efforts. We propose to keep the ball rolling, and to this end shall endeavor to give perfect satisfaction in every respect to all our patrons. If you have not received a copy of our 1200-page catalogue, make a note of it in your next order. It will give you a fair idea of our stock, which for quality and variety adapted to the wants of the Western trade is unequalled in this country.

Come and See Us.—If you come to Chicago at any time, whether you want any goods or not, come and see us. We are very busy people, but we will make you feel at home with us, and render you any service in our power.

The catalogue of the Cline Mfg. Company, 70 and 72 West Washington street, Chicago, which has just been issued, covers a line of Hardware specialties of a varied nature, all of which are made under patents owned by the company. Among them are Cline's Improved Steam Washer, the Active Pipe-Vise, Curling-Irons of several patterns, the Perfection Roaster and Baker, the Labor-Saving Dust-Pan, Revolving Ash-Sieves, Cline's Foot-Warmers, the Little Giant Cooking Stove, Combined Glue-Pot and Stove, &c. Special care is used in the manufacture of all these goods, which have been designed to meet the exact wants of the people who are expected to use them. The company are constantly making additions to their line, which has now become quite extensive.

E. W. Gilmore, manufacturer of Strap and T Hinges at North Easton, Mass., has recently been spending some time at Chicago. He is one of the leading stockholders in the wholesale Hardware house of Horton, Gilmore, McWilliams & Co., at Chicago, and expresses himself as very highly pleased with the growth of the business of the house since he became connected with it. Although convinced of the very promising future in store for the firm at the time he entered it, the growth of their business has greatly exceeded his expectations. The month of August just past has witnessed the heaviest trade in their history.

Lee-Clarke-Andreesen Hardware Company, Omaha, Neb., have issued their fall circular relating to seasonable specialties, of which an interesting and varied line is shown, some comparative novelties being represented in connection with their staple goods. In their introductory circular they allude to their stock as being now full and complete and ready for fall business.

They refer to the completeness of their assortment in all departments, many new and desirable goods having been added. They also say:

We pride ourselves on our facilities for quick shipments of all orders. Mail orders receive prompt attention and our personal guarantee as to prices. Our constantly increasing business demonstrates the fact that we lead the market on prices. We propose to continue doing so. As heretofore, we are represented on the road by an able corps of traveling salesmen, whose enterprise and energy are recognized throughout the West. We extend a cordial invitation to all Western merchants to visit this market and inspect our stock and prices, feeling assured that the Hardware market of Omaha is unsurpassed by any other city in the country.

Norwich Nickel and Brass Works, Norwich, Conn., issue a handsome catalogue showing their line of display fixtures for use in stores. A variety of Frames, Individual Stands, Cornice Fixtures, specialties and novelties for window and interior display are shown. While many of these are specially adapted for other lines of business there are a good many of them that might be used by Hardware men. The pamphlet also contains some useful suggestions in regard to window dressing.

The Chapman Mfg. Company, Meriden, Conn., have issued a new and attractive catalogue of their line of Saddlery Hardware. It is a pamphlet of more than 130 pages, elegantly printed in red and black upon an exceptionally fine quality paper. It is fully illustrated, the cuts of the goods being placed on the left-hand page and the price-list on the opposite page, the different goods being plainly numbered so as to facilitate reference to the price-list and avoid mistakes. An attractive and interesting line of goods is thus brought to the attention of the trade. They also issue a separate catalogue of Call and Tea Bells, a line which they have recently added to their business. Sixteen pages are devoted to the display of these goods, and the company state that they are enabled to put these goods on the market at a very low price, as they are made in connection with their Sleigh-Bell department. They also state that they will sell only to jobbing trade. The goods are listed by the gross instead of by the dozen, and one of their leading patterns, we are advised, is offered as low as \$9 a gross. The company have thus three departments all under one management—Saddlery Hardware; Sleigh-Bells, Plumes and Call and Tea Bells, and Dog-Collars, and have just completed a four-story addition to their factory in order that they may be enabled to meet the demand for their goods. A number of novelties have recently been added, especially in the line of Sleigh-Bells, Plumes, &c.

Business Methods.

We have the following communication from a house on the Pacific Coast. It refers, it will be observed, to methods of taking account of stock, with a special reference to the cost of the goods as affected by the freight, inquiry being made as to the best and most convenient method of making the inventory. This matter is one of very general interest, and we shall be glad to have suggestions from the trade as to the best methods of stock-taking so as to make the inventory correctly represent the value of the goods:

We would like to hear the opinions of the trade in regard to the method of taking account of stock. The season for so doing will soon be upon us and we want to know the best way to find out how much our stock is worth. Our remarks do not

apply to New York trade, but more particularly to Western trade, where freight makes quite a difference in the cost of goods—in some instances as high as 40 per cent. We find it very hard to obtain the correct cost on most discount goods. For instance, take a line of Sargent's goods. When they come in they cost, say, 50, 10 and 5 per cent. off list; we add freight and mark them net. Some months after when taking stock the same goods are selling for 60 and 5, and thus it is a very hard matter to figure the cost. Then take such goods as Butts, Casters, Brackets—it costs about 10 per cent. more to land large sizes than small. How can we most conveniently find the correct cost?

Trade Topics.

We have received several letters from merchants in regard to the frequency of list changes and the annoyance thus caused to the trade. A well-known Kansas house thus refers to the matter:

The Nail manufacturers have acquired an appetite for changing the card rate; one month because the card does not compare with the relative cost of the goods, and the next because competition requires a change. When manufacturers get to changing lists there seems to be no end to it, and while the fact that the card has been carefully corrected would indicate permanence, as a matter of fact it increases the probability of further changes. The makers of Nails, Screws, Iron Pipe and Window-Glass seem to be as fond of a new card as of a new coat of paint on their houses, and we presume they will continue to have it.

Another concern in Iowa, alluding especially to the Wire Nail list, writes in the following emphatic manner:

Changes in lists are the least of our trouble. Like the eels that by frequent skinning get to like the operation, we have come to regard "new lists" among the pleasant varieties of an otherwise monotonous life. Our gratitude to the manufacturers for such thoughtful attention to our business is saddened only by the regret that they should seem to think it necessary to base these frequent changes on an alleged desire to equalize price with proportionate cost of production. When in June, 1888, they figure that it costs 35 per cent. more to make 60d than 12d Wire Nails, without ourselves understanding the cost of either we are willing to take their say-so in the matter; but when in June, 1889, they tell us the 35 cents extra comes the other way, that is to say, that instead of the cost of 60d being 35 cents more than 12d, it really costs all the time 35 cents more to make 12d than 60d; in other words, that either then or now they were just 70 cents a keg off on cost of production—when they tell us these things and ask us to believe them we are in a grave state of doubt whether the manufacturers of Wire Nails are lot of idiots or are playing us for suckers. Whenever the manufacturers really set out, as in this case, to get an average advance of 25 cents per keg on a fairly assorted carload of Nails, they can be safely depended upon for results; but when they attempt to justify by cost of production they run into mathematics evidently quite beyond their depth. Only wake us up when they make a fresh list or "equalization" and we will adjust ourselves to the new situation without a murmur, satisfied that "whatever is right," or if it isn't there's no use kicking.

The desirability of agitating the subject and letting manufacturers know the disfavor with which such changes are regarded is alluded to in the following letter from a leading Massachusetts house:

Hardware dealers as a rule are "patient and long-suffering," as evidenced by their quiet acceptance of frequent list changes, however inconvenient they may be to them. We believe that if the trade would express their objection to these changes it would be of lasting benefit.

Referring to the condition of business and announcements of advances made by some of the Chicago houses, we have the following from Iowa:

We have received notice of an advance on Sheet-Iron and Cut Nails, with the prospect of further advance in these goods, also on Strap and T Hinges, Scoops, Shovels, cheap box and other heavy goods. They already report shortage on Stove-Boards from factory. Trade does not seem to "pick up" as rapidly as could be desired, merchants not feeling like stocking up more than present necessity requires, which necessity seems very limited. Most of the merchants have got in their stocks of Sheet-Iron, Stove-Boards and Elbows. The Hardware stores all handle Stoves, and have tin-shops in connection. There seems to have been a very limited amount of building done the past summer, and tin-work has shown little or no activity. On the whole, the trade has not been at all encouraging during the past nine months. The anticipations for fall business are more promising, and with the present outlook of crops are likely to be fulfilled. Recent show-ers have been appreciated.

The great decline which within a year or two has taken place in Wood Planes has called out the following letter, which will be read with interest as giving the views of a party familiar with the line in question and referring to principles which apply in other directions:

After reading your report of prices of Wood Planes we would suggest to the manufacturers to make the price to the trade a little better, say, 99 and 10 per cent. discount. That, it seems to us, would fill the bill exactly—cheap goods. For if it is a good policy for both maker and purchaser to change the discount from 20 per cent. to 70 per cent., surely it would be better yet to change from 70 per cent. to 99 and 10 per cent., which is not so great a decline, from 20 to 70 per cent. discount being 50 cents, while it is less than 30 cents from 70 to 99 and 10, so the fall would not be as much as the first. "Buy my Stove," says the dealer to the farmer, "and you will save one-half of your wood." "If that is so," replies he, "I guess I will take two, and save it all." We make the suggestion hoping it may have a fair trial, as we do not think that any more Planes have or will be sold at 70 and 10 per cent. than would be at 20 per cent. discount. We believe that the only effect of this more than senseless operation has been to drive to the wall a number of small makers of Planes who did nearly all of their work by hand and made perfect-working goods, and for these goods were able to get list or even better prices, and by so-doing actually aided the sale of cheaper goods of the other makers, oftentimes selling them to such buyers as were determined to buy the cheaper-priced article, and these makers only getting reasonably fair prices for their work. But now the machine-made work that looks somewhat similar being on sale at one-third or one-quarter the price, has at last crowded them out of their little shops, and who is any better for the foolish operation? A good article is worth a fair price and why compel the public to do without it unless there is benefit to someone? Only a certain number of Wood Planes can be sold at any price, and as the Iron Planes have come to stay with their increasing kinds and sales the sale of Wood Planes is growing less and less, and we can see no reason for selling what are wanted at less than their worth. Yet, as we may be wrong in this idea we would like to have the 99 and 10 per cent. discount plan tried a while and see what the result would be. We know of no other goods in the Hardware line that are sold at so great a change in price in three years past as Wood Planes.

Chicago citizens claim to have \$25,000,000 assured in behalf of the world's fair project in that city, and propose to issue bonds to be secured by actual property.

Exports.

PER BARK GRONSEAR, AUGUST 6, 1889, FOR PORT ELIZABETH, SOUTH AFRICA.

By *Goulds Mfg. Company*.—2 cases Pumps.
By *J. A. Gifford*.—4 packages Agricultural Implements.

By *Des Brissay & Allen*.—60 cases Plows.
By *Corner Bros. & Co.*.—24,000 pounds Barb-Wire, 228 pounds Cord, 5 Store Trucks.

By *H. W. Peabody & Co.*.—15,000 pounds Nails, 39 cases Handles, 24 packages Agricultural Implements, 109 packages Carriage-Ware, 1 bale Sash-Cord.

By *W. H. Crossman & Bro.*.—4 cases Hardware, 15 gross Shoe-Polish, 19,000 pounds Nails, 2 dozen Store Trucks.

By *Oelrichs & Co.*.—2500 pounds Nails, 4250 pounds Sash-Weights, 6679 pounds Manila Rope, 26,000 pounds Nails.

By *J. Norton & Sons*.—5 boxes 1 crate Buggies and Parts, 18 dozen Padlocks, 180 pounds Agricultural Implements, 12 Rifles.

By *E. Kuhe*.—6 cases Hardware, 11 cases Plows.

By *R. W. Forbes & Son*.—20 dozen Axe-Handles, 6 cases Fruit-Jars, 1 dozen Saws, 1200 pounds Cut Nails, 12 dozen Sledge-Handles, 2 cases Plows, 4 cases Fruit-Jars, 2 packages Meat-Choppers, 4 Washing-Machines, 1 dozen Ladders.

PER BARK ADVENTURER, AUGUST 23, 1889, FOR BRISBANE, QUEENSLAND.

By *R. W. Forbes & Son*.—40 packages Stoves, 2½ gross Axle-Grease, 2 dozen Barbers' Shears, 2 packages Lampware, ½ gross Machine-Oilers, 6 cases Lampware, 21 packages Stoves, 6 crates Churns, 5 gross Fasteners, 2 gross Shade-Rollers, 8 cases Meat-Choppers, 4 dozen Hammers, 2 packages Kitchen-Ware, 34 dozen Axes, 3 packages Hardware, 12 packages Hardware, 2 dozen Snaths, 1½ gross Shade Rollers, 1 case Shade-Fasteners, 1 case Plated-Ware, 5 cases Meat-Choppers, 11 cases Lamp-Ware, 2 gross Shade-Rollers, 1 case Agricultural Implements, 6 Pumps, 3½ dozen Whips, 1 package Hardware, ½ dozen Seed-Sowers.

By *H. W. Peabody & Co.*.—24 packages Agricultural Implements, 10 packages Carriages, 1 case Hardware, 2 cases Carriage-Ware, 150 packages Stoves, 15 cases Perambulators, 30 dozen Shovels, 6 cases Edge Tools, 10 dozen Lamp-Ware, 3 packages Wagons, 3 cases Carriage-Ware.

By *Arkell & Douglas*.—24 dozen Tools, 25 cases Axle-Grease, 25 cases Handles, 1 case Hardware, 4 boxes Shellers, 7 boxes Tools, 1 case Locks, 1 case Plated-Ware, 11 packages Lamp-Ware, 30 cases Hatchets, 3 cases Cart-ridges, 1 case Guns, 1 case Hardware, 15 cases Hatchets, 13 cases Castings.

By *Maitell & Quereau*.—15 kegs Nails.

By *V. Basanta*.—3 dozen Saws, 4 cases Plated-Ware, 6 Trucks.

By *A. S. Lascelles & Co.*.—22 packages Lamp-Ware, 5 boxes Plated-Ware, 1 box Hand-Trucks.

By *Coombs, Crosby & Eddy*.—3985 pounds Stoves.

PER SCHR. BENJ. FABENS, AUGUST 30, 1889, FOR PORT NATAL, SOUTH AFRICA.

By *Strong & Trowbridge*.—1 Carriage.

By *R. W. Forbes & Son*.—4 dozen Axes, 24 dozen Pick Handles, 11 dozen Axes.

By *Arkell & Douglas*.—3 dozen Forks, 24 dozen Axes, 3 boxes Stove-Pipe Castings, 60 dozen Brooms, 80 Plows, 6 dozen Barrows, 300 dozen Axes, 12 dozen Hatchets, 2 dozen Axes, 10 packages Stoves and Parts, 4 Carriages, 36 dozen Handles, 12 dozen Axes and Hatchets, 12 dozen Brooms, 24 Plows, 6 Sewing-Machines, 12 sets Sad-Irons, 1 dozen Sledges, 6 Sewing-Machines, 1 case Brooms, 40 dozen Picks, 1 dozen Pumps, 3 dozen Curry-Combs, 2 Wagons, 5 Copying-Presses, 4½ dozen Clocks, 2 Scales, 12 dozen Axes, 6 cases Rims, Spokes, &c., 21 gross Hardware, 1 Carriage, 25 dozen Stamped Ware, 3 Carriages, 2 cases Machinery, 6 dozen Wheels, &c., 6 dozen Handles, 6 dozen Wheelbarrows, 16 Ranges, 2 boxes Hardware, 3 dozen Pumps, 5 Tinsmiths' Machines, 300 Broom Handles, 1 case Machinery, 12½ dozen Hardware, 25 dozen Brooms, 2 dozen Strops, 3 Carriages, 1 dozen Pails, 1 Hydraulic Ram, 4 dozen Plows, 5 cases Hardware, 700 pounds Nails, 80 dozen Hardware, 360 pounds Sash-Cord, 11,300 pounds Sash-Weights, 750 pounds Horse Nails, 144 dozen Handles, 3 dozen Axes, 107 packages Agricultural Implements, 172 dozen Tools, 12 Carriages, 2 Carriages, 6 Lamps.

PER BARK HARVARD, SEPTEMBER 3, 1889, FOR ADELAIDE, AUSTRALIA.

By *Isley, Doubleday & Co.*.—5 gross Axle-Grease, 19,040 pounds Axle-Grease.

By *Meriden Britannia Company*.—4 boxes Plated-Ware, 15 packages Plated-Ware.

By *Arkell & Douglas*.—1 case Hardware, 46 packages Carriage-Ware.

Arrangement of Stores.

The desire has frequently been expressed by our correspondents for a representation of a well-arranged Hardware store of small size. This will be met to some extent by the following description. It will be observed that in this establishment the arrangement of the stock is compact and systematic, and embodies some original ideas, so that it is worthy of a prominent place among the illustrations of small stores. Tools and Cutlery are made a specialty. A light line of House-Furnishing Goods is kept. Nails and Shelf Hardware generally are carried in stock, as well as Sporting Goods and Fishing Tackle, but no Stoves whatever.

are displayed. The distance from the ledge to the bottom of the gallery is 4 feet deep. Shelving alone is used above.

In this cut it will be observed that Braces are displayed on a rack, the sides of which extend diagonally from the back of the ledge to the top of the gallery posts, while cross pieces are arranged at suitable intervals on which the Braces are hung by screw-hooks. The wall back of the Brace rack contains samples of Bits. Prices are attached to all of these goods and wherever practicable throughout the store, and as but one price is made to any buyer every customer is his own salesman to that extent.

Compasses, Dividers and Calipers are kept in boxes 5 inches high, in a tier of four shelves, covering the upper part of a 4-foot section. Below is a display of

The upper shelf is used for boxes with draw-pulls screwed on them. The ends are covered with green paper and bear the names of their contents, consisting of Vises, Adze-Bits, Cold Chisels, Oilers, Strap-Hinges, &c. The two lower shelves are divided by partitions into small bins, in which original packages are stored.

The counter show-cases, which extend almost the full length of the store, are handsomely fitted for the display of Cutlery and Fancy Goods. The case nearest the door is used for Pocket-Knives, which are grouped in circles, stars and geometrical figures according to styles and grades, the finish of the handles, &c. The bottom of the case is covered with blue velvet, and steps have been built in to relieve the flat bottom. One case is devoted entirely to Razors, arranged on a series of

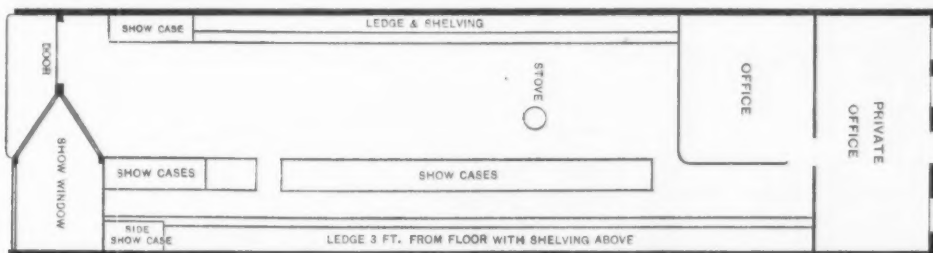


Fig. 383.—Floor Plan of Store.

The full depth of the store is but 57 feet, its width is 16 feet and the ceiling is 13½ feet high. A gallery runs along both sides of the room and across the rear, 7 feet from the floor. Entrance to the gallery is gained by a flight of steps at the rear end of the room. An office, 9 x 10 feet, with a neat walnut and glass partition, occupies a corner of the rear end. Back of the store-room is a private room. The shelving along the sides of the store is made in sections of 12 feet, so that it can be taken down easily and removed to another building, or a section can be changed to another part of the store to secure a different arrangement if it should be deemed desirable. The fixtures were made for the store and are claimed to be

Screw-Drivers fastened to the wall above the ledge. On the ledge immediately in front of these are Levels, Wooden Clamps, &c. A peculiarity of the arrangement of these samples is that the sizes are so placed that the disappearance of one would be almost instantly observed, as in the case of theft. If a sample is preferred by a customer he is allowed to take it, but its place is immediately filled from stock.

Another tier of four shelves 5 inches high is filled with boxes containing Gauges, Pincers, Brad-Awls, &c. Below are Chisels arranged against the back, similar to the Screw-Drivers above described, while on the ledge in front are boxes of Screw-Bits, Mallets, &c.

The next tier of four shelves 5 inches high carries boxes containing Pocket-Levels, Tape-Lines, Gimlets, Punches, &c.

steps covered with black velvet. Another case contains Revolvers and Sporting Goods. The adjoining case is filled with Carving Sets, Butcher Knives and other Knives and Forks laid on a ground of red velvet. The last case is used for miscellaneous articles.

An admirably-designed Scissors case, of new design, occupies a position on one of the show-cases. It is represented in Fig. 387. This case is constructed with a wooden frame and glass sides, one of the sides opening on hinges for a door. The rack inside, on which the Scissors are hung, is made of wood, covered with velvet. The Scissors hang on screw-hooks. There are no cross-pieces on the rack toward the door, so that a hand can be freely inserted to take a pair of Scissors from any location.

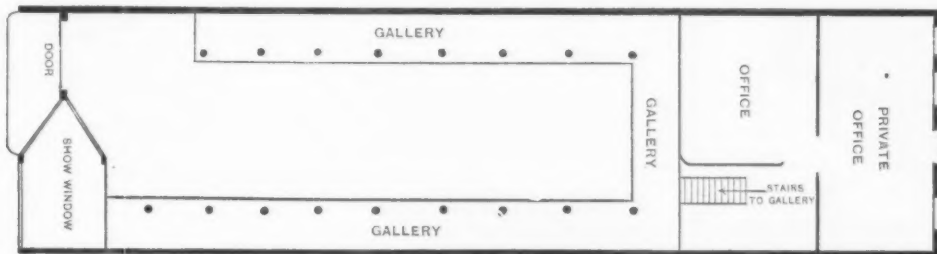


Fig. 384.—Plan Showing Arrangement of Gallery, Office, &c.

cheaper than in most Hardware stores. A feature of the arrangement employed is that the full line of goods carried is in sight of the customer, so that he can see almost at a glance where the article is of which he is in search.

The diagrams, Figs. 383 and 384, above show the ground plan of the store and the arrangement of the gallery. In the latter the line of dots represents the supporting posts.

The end of a section of the shelving and gallery is shown in Fig. 385. First comes a set of shelves surmounted by a ledge. Some of these shelves are inclosed with paneled doors, while others are open and fitted with boxes sliding in and out like drawers. The ledge is 3 feet from the floor and 2 feet wide, and is used for the display of Planes, Mallets, Levels, Hatchets, &c. On the vertical space back of the ledge Hammers, Bits, Chisels, &c.,

Drawing-Knives hang against the wall below, and on the ledge in front are Hatchets, arranged as shown in Fig. 386.

Notches are cut at an angle of about 30° in the top of a strip extending across the ledge and the blades of the Hatchets are set in the notches with their handles resting on the ledge. They are thus easily inspected and are not blunted or defaced by being bumped against one another, as would be the case if they were lying flat or in a pile.

The remainder of the shelves and the ledge on this side of the store are devoted to Try-Squares, Chisels, Gauges, Wrenches, Vises, &c., samples being fixed to the wall wherever practicable, while the stock is carried in the boxes on the shelves above.

The 3 feet of space from the ledge to the floor is divided into three shelves,

Back of the counter is first a wall show-case for the display of fine tools. Next come small shelves with boxes of Fishing-Tackle, Lines, Hooks, &c., partly surrounding a File case standing on the ledge, the construction of which is indicated in Fig. 388.

In this File rack the files are assorted according to size, and the arrangement is such that any File can easily be seen, so that boxes do not have to be opened nor is it necessary to handle a number of Files to get the kind desired.

Loose Screws are kept in tin drawers mounted in a tin frame made to fit a space 4 feet long by 12 inches high and 8 inches deep. There are four tiers of drawers, with 13 in each tier. These drawers are painted green, have the sizes of the Screws lettered on the outside, and have metal knobs.

Saws are kept back of the counter in racks resting on the ledge. These racks consist of a round stick at the bottom, against which the handles of the Saws rest, and another at the top, into which notches have been sawed to receive the blades of the Saws. The lower stick extends between blocks resting on the ledge, and the upper stick is nailed to cleats on

have not only great speed, but size also, and especially length, to enable them to keep the sea, and in all weathers maintain that superiority of speed over the ordinary battle ship with which they are popularly credited and which alone renders them valuable. There seems to be no reason why they should not be 400 feet long, or in fact any length that will insure the

railroad company took an appeal—Alabama Great Southern Railroad Company vs. Mount Vernon Company—to the Supreme Court of Alabama, where the judgment was reversed. The court, in the

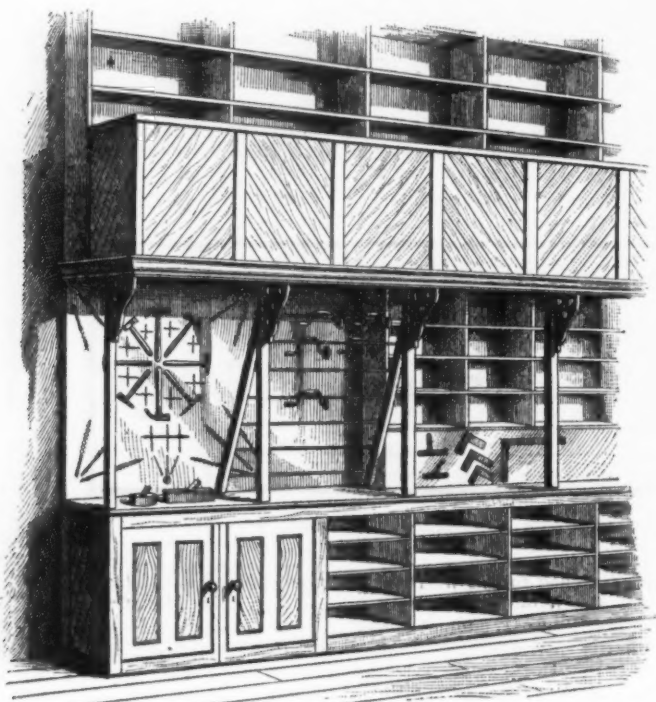


Fig. 385.—Section of Shelving and Gallery.

the sides of the shelf supports. The arrangement is represented in Fig. 389.

These Saw racks extend along the ledge about 16 feet, thus giving room for a large stock and great variety, and permitting any one of the number to be withdrawn easily for the purpose of examination or sale. The space below the ledge back of

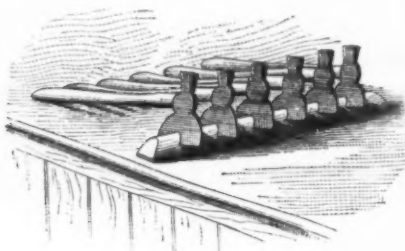


Fig. 386.—Method for Displaying Hatchets.

the counter is utilized for Shovels, Coal-Hods, &c. Nail bins occupy a portion of it toward the rear of the store. Scales for weighing Nails are close by, occupying a shelf under the steps leading to the gallery. The shelves around the upper part of the room, reached by the gallery, are devoted to reserve stock. There are five shelves running along this space, with about a foot clear between them. The gallery railing is used for advertising cards and signs calling attention to particular lines of goods. These cards are embellished with ingenious lettering made by combinations of Tools.

In reference to the speed of war ships at sea, a correspondent of the *Western Morning News* gives an account of a four-hours' trial of the British Mediterranean squadron, August 1, and remarks: "The conclusion reached is that cruisers must

required speed, as they are not required to be handy in maneuvering, as is the case with battle ships."

Through Freights—Connecting Lines.

The Mt. V. Company delivered a quantity of cotton to the E. A. Railway Company to be carried to the sea-board, and no limitation of its liability was expressed by the carrier in its shipping receipt, nor in any other way. The cotton was put in one of its cars and taken to the depot of a connecting line, the A. G. S. Railroad Company, which was to carry it to the coast, these carriers having a contract to transport the freight of each other, and then placed on one of the trucks of the A. G.

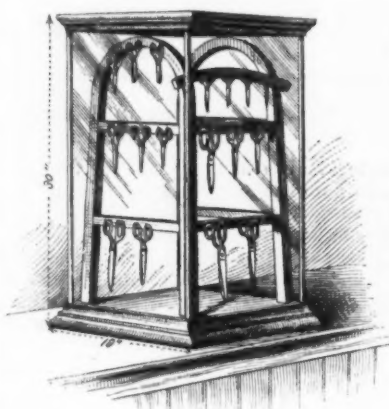


Fig. 387.—Scissors Case.

S. Railroad Company, for transportation to the coast. While there the car and its contents were burnt, and the shippers sued the A. G. S. Railroad Company as a carrier for the loss. In this case a judgment was recovered by the plaintiff, and the

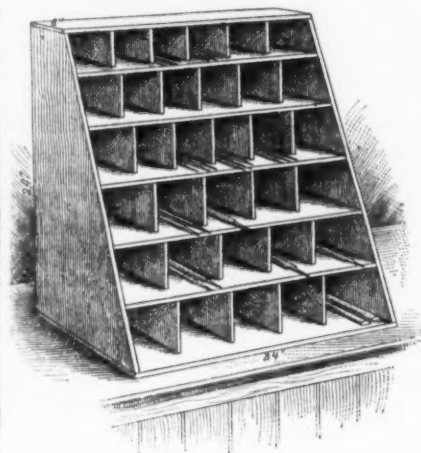


Fig. 388.—File Case.

opinion, said: "When a railroad company undertakes to transport goods from one point to another, in which transportation connecting lines must be used, unless it limits its liability in some definite way it will be held liable for the safe delivery of the goods at their point of destination. The shipper cannot recover from any of the connecting lines for the loss of the goods, for he has no contract with any of them. The fact, as in this case, that the contracting company has put the goods in its car into possession of the connecting company, which has accepted the car and the goods in it for transportation, does not at all create an implied contract with the

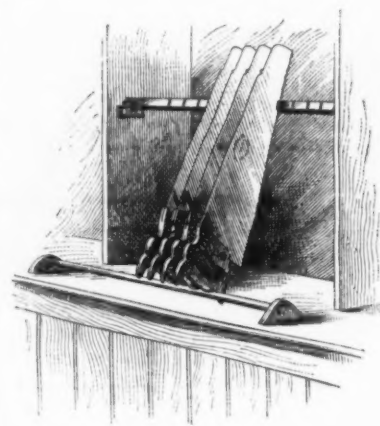


Fig. 389.—Saw Rack.

shipper. The judgment must be reversed and a new trial granted."

Mast, Foos & Co., Springfield, Ohio, are busily engaged in the fencing and cresting departments of their establishment. Among contracts recently secured for fencing was one for 5000 feet for the new State capitol at Austin, Texas, to inclose the capitol grounds. This fencing is composed of heavy 4-inch square pickets, 4 feet high, with 2 x 2 inch channel railing placed in granite coping 20 inches wide. Both fencing and gates are of special design, the whole to be completed by January 1, 1890. This contract, we are informed, was taken in the face of the strongest competition.

The New York Board of Aldermen fixed the tax rate at 1.95 per cent.

Special Cast-Iron Wagon-Skeins.

The Illinois Iron and Bolt Company, Carpentersville, Ill., are known as very large manufacturers of wagon-skeins. The accompanying illustrations represent some of their special cast-iron wagon-skeins and indicate something of what they are doing in this direction, such skeins being now put on the market and offered to the trade. All these skeins are made extra heavy. Fig. 1 shows the Orput patent lug used on front axles for attaching draft or stay chains. The following sizes are furnished: $2\frac{1}{2} \times 8$, $2\frac{3}{4} \times 8$, 3×9 , $3\frac{1}{2} \times 10$, $3\frac{1}{2} \times 11$, $3\frac{3}{4} \times 12$. The boxes of these skeins are made to wedge in. Fig. 2 represents Hefley's patent skein with sand-bands, and shows device for attaching clip and truss-bar. These skeins are also made



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

Special Cast-Iron Wagon-Skeins.

with boxes to wedge in. A descriptive circular, giving a list of sizes in which this skein is made, can be had on application. Fig. 3 shows a skein made to receive clip and truss-bar. The clip-bar is intended to be welded to the truss-bar in the form of a T. This style is furnished $2\frac{1}{2} \times 7\frac{1}{2}$, $2\frac{3}{4} \times 8$, $2\frac{3}{4} \times 8\frac{1}{2}$, 3×9 , $3\frac{1}{2} \times 10$, $3\frac{1}{2} \times 11$ and $3\frac{3}{4} \times 12$, with or without oilers, and with boxes made to press in. Fig. 4 shows an oiler-skein with chambered arm and a fluted box to press in and also device for clipping. This skein is furnished $2\frac{1}{2} \times 8$, $2\frac{3}{4} \times 8$, $2\frac{3}{4} \times 8\frac{1}{2}$, 3×9 , $3\frac{1}{2} \times 10$, $3\frac{1}{2} \times 11$, $3\frac{3}{4} \times 12$ and 4×12 , with or without oilers. Other patterns are shown in their advertisement on page 37, of which full descriptions are given in their new catalogue.

Potato-Peeler.

The Little Hustler Potato-Peeler, shown herewith, is put on the market by Silver & Co., 56 Warren street, New York. The cutting-blade is described as made of refined steel and can be resharpened. In use the peeler is placed flat upon the



Potato-Peeler.

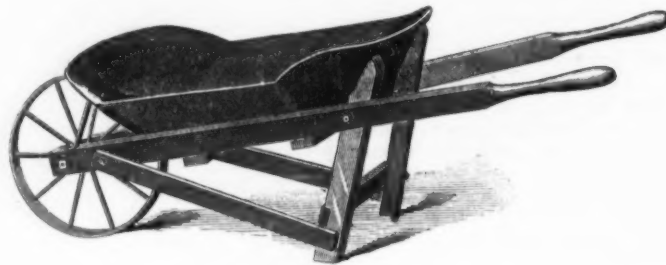
potato or other vegetable, when by drawing it rapidly over the surface the rind may be removed. Specks and eyes may be obliterated by use of the point shown. The peeler is 6 inches in length and has a convenient handle, which is galvanized.

Steamers from Europe are crowded with passengers homeward bound. Never was there such a rush before. Steamship offi-

cers who give up their rooms to accommodate get a bonus as high as \$150 or more. It is said that 4000 passengers left England for America in a single day, so that of late those in the cabin outnumber those in the steerage.

Steel-Tray Wheelbarrows, Railroad Pattern.

The accompanying illustration represents a railroad-pattern steel-tray wheelbarrow which has recently been put on the market by the Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, especially to meet the export demand for a metal-tray barrow of this shape. The trays, or bowls, are stamped from a solid piece of steel, without seam or rivets, and



Steel-Tray Wheelbarrows, Railroad Pattern.

shipment of the goods, and especially for export trade, it is stated that the barrows knock-down completely for shipment and storage, and can be set up quickly and easily by any one. The corresponding parts of the barrows being alike, any pieces lost or broken can be easily replaced or repaired. Only one size of these barrows is made—capacity, $4\frac{1}{2}$ cubic feet. The greatest width of tray is $32\frac{1}{2}$ inches, the greatest length, 31 inches; depth at wheel end, 11 inches, and at the handle end, 8 inches. Weight, complete, 60 pounds.

The Waltham Key-Holder.

The article shown herewith is manufactured by the Waltham Watch Tool Mfg. Company, Waltham, Mass., for



Fig. 1.—The Waltham Key-Holder, Open.

whom E. M. Richardson, of the same place, is agent. The cuts are full size and represent the holder open and closed. The holder consists of a chain and bar having an automatic lock, which permits



Fig. 2.—The Waltham Key Holder, Closed.

its easy opening and closing. The opening of the holder is accomplished by inserting the thumb-nail between the slide and bar. The slide and bar are made of German silver and the chain is steel nickel-

plated. The goods are put up on cards of one dozen each. A clock-dial is printed on each card and the chains are strung over each hour on the dial in triangular shape. The holders are sold at \$1.25 per dozen and \$12 per gross.

A contemporary remarks that the South Dakota plan of booming a place is original. A town of \$1,000,000 valuation, for example, "succeeds in having a \$5,000,000 fire about three times a day" and obtains a wide notoriety.

The Gardner Patent Die-Stock.

The accompanying illustrations, Figs. 1, 2 and 3, represent this article, which is put on the market by Charles H. Besly & Co., 175 and 177 Lake street, Chicago. Fig. 1 gives a general view of the die stock, showing the manner in which the dies are held in the stock by an adjustable guide, which is loosened and tightened by thumb-screws. It also shows screws in the end of the die with micrometer adjustment for adjusting dies to cut exact size or $\frac{1}{2}$ inch over size for rough iron, or for cutting any size between exact and $\frac{1}{2}$ inch over size.

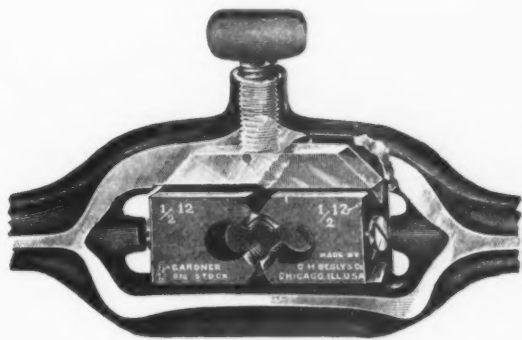


Fig. 1.—Gardner Die-Stock.

Fig. 2 shows full-size adjustable die for the Gardner Die-Stock, as well as the micrometer arrangement above referred to. Fig. 3 represents the stock in case complete with seven sizes taps, dies and hardened bushings, cutting $\frac{1}{4}$ inch to $\frac{3}{4}$ inch, inclusive. The length of the stock is 19 inches. The manufacturers emphasize the fact that a full thread is made at one cut, and refer also to the form as combining the greatest strength with the least wear. They also give the following more detailed description of the die:

The die clamped between adjustable hardened Vs and backed up by hardened stops is practically a solid die when at work. In dies as heretofore made the adjustment is effected by screws in collet, stock-heads, &c., by which the cutting section of the dies are held, and when they are removed from these holders the adjustment is lost. In the Gardner die the adjusting screws are in the cutting sections themselves, thus making them independent of any auxiliary collet or holder, except the stock, which is made to a standard size, and is fixed and unchangeable. The dies are made with short bevel on one side (for threading close to a shoulder), with longer cut on the reverse for regular bolt work. They can be used either side up in the work. The heads of the adjusting screws are marked to correspond with graduations on the ends of the dies. By means of these graduations the dies may be set to cut exact standard size, or 1-64 or 1-32 over size, and the adjustment made to these variations in ten seconds with all the certainty and accuracy of a micrometer caliper. The form of the handles will be found a convenience. They are easier to the hand than polished gas-pipe, and allow the tool to be hung out of the way when not in use. An experienced person may think this feature of little consequence, but it is enough to make this tool a favorite if it were in no other point superior to its competitors. All parts of the stock subject to wear are case-hardened. The guide-bushings are of hardened steel and will outwear 30 made in the ordinary way of cast-iron.

Gem Patent Thermometer Sad-Iron.

The article represented in the accompanying engraving is the invention of Mrs. Sarah Waterman, of Milwaukee, Wis., and is put on the market by L. Waterman, 312 and 314 Grand avenue, Milwaukee. A view of half the grate used in the iron is also presented. It is claimed that by the use of this grate the

heat at the bottom of the iron is made uniform, a hot flue being artificially created, while at the same time the clothes can never be burned or singed. One of the special features of the iron is the thermometer, the position of which is indicated in the illustration. These thermometers are especially constructed for this purpose and indicate when new coal is needed. They are warranted to withstand the heat. In using the iron a few pieces of red-hot charcoal are placed on the grate inside, and after the dampers closing the funnel-shaped holes are opened the black charcoal in small pieces is put on top and the iron closed. In a short

The following directions in regard to the management of the iron will be of interest:

Place a piece of paper on the grate, have it well ignited and then put a few small pieces of charcoal on it. Take out of the little box a snuff of the powder and sprinkle it on top of the charcoal and set the iron in a place where it will have plenty of draft. See that all side dampers are open. When the coal is well ignited fill the iron full with charcoal, use another pinch of the powder and the iron is ready for use. When the thermometer registers above 350° fresh charcoal wants to be put on. The ash-pit wants to be cleaned every hour or two; by raising the back or rear damper and simply turning the back down the ashes will drop out. Sometimes it may be



Fig. 2.—Adjustable Die.

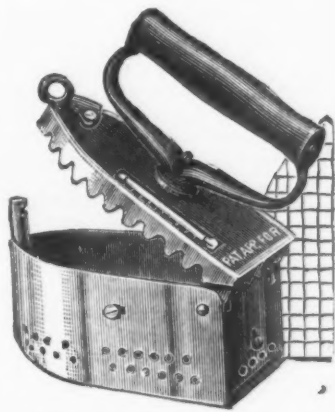


Fig. 3.—No. 1—Stock in Case.

time the iron, having a good draft from all sides, will be ready for operation. When the thermometer on the cover has registered a temperature of 230° to 250° it is claimed that the operator will be able to iron anything, cotton or woolen, starched clothes or linen. The removal of the ashes from the iron is easily accomplished. After they have fallen through

necessary to shake it a little or knock on the bottom to let the ashes fall out easy. When not in immediate use close all dampers and open the top; but whenever fresh coal is put on use a little of the powder, as the powder will do away with the smell of the charcoal.

The iron is made in four different sizes, ranging from 5 to 18 pounds, and is put on the market with high claims for its excellence. A number of testimonials are also given as to its merit.



Gem Patent Thermometer Sad-Iron.

the holes in the grate a button in the rear of iron, shown in the cut, is pushed upward, making an exit at the bottom through which the ashes may be dumped. The grate is removable and no poker or other appliance is needed to remove the ashes from it. The funnel-shaped holes on the sides of the iron, while securing, it is claimed, perfect combustion of the charcoal, are so constructed as to prevent the escape of dust or dirt. In order to overcome the obnoxious smell peculiar to the use of charcoal a box labeled the "Gem Charcoal Purifier" is furnished, the contents of which have been manufactured especially for use with this iron, although the powder may be employed for all similar purposes. The sides and bottom of the iron are heavily nickel-plated, giving the iron an ornamental appearance.

New Beef-Tea Press.

Silver & Co., 56 Warren street, New York, are putting on the market the beef-tea press which is illustrated in the engraving herewith. A portion of the press has been cut away to show the construction, thus making a description of it unnecessary. The pressure brought to bear



New Beef-Tea Press.

upon the meat by turning the ring shown is referred to as very great. The press will hold $\frac{1}{2}$ pound of meat.

Difficulties which have been brewing for several years between Irish and Hungarian workmen in the Delaware rolling-mills at Wilmington and Tosker & Co.'s pipe-mills resulted in bloodshed on Sunday morning. One man was killed and eight were severely injured.

Twisted Iron.

We have recently received from Rathbone, Sard & Co., Albany, N. Y., some specimens of cast-iron which manifest unusual properties. The specimens are pieces of metal about 1 inch in width, $\frac{1}{4}$ inch in thickness and some 15 or 18 inches in length. Some of these strips have been twisted so as to form spirals. Others have been wrapped up in coils. That cast-iron can be made very tough and a certain amount of elasticity imparted to it is known to many of our readers, but it is unusual, to say the least, to find in stove foundries any metal which will bear such tests as here indicated. The twisting and bending is done hot. The company assure us that there is nothing in the metal in these specimens, but a judicious admixture of good irons and the absence of old scrap. They make the assertion, further, that it represents their daily melt and that all the Acorn stoves which are being produced have their plates of the same metal that shows these peculiar tests of toughness. All this is undoubtedly of special interest to the trade. It is not to be understood that because the metal will bear a torsional strain of the kind indicated in the engravings that it is still unbreakable, for, of course, there is a limit to its elasticity, but that it is stronger than many specimens of cast-iron to be found in stove-plates it is scarcely necessary to assert after an inspection of the samples which have been submitted.

Secretary Windom has decided in favor of the Bowling-Green site for the new Custom-House and Appraisers' Stores, thus terminating a long and bitter contest among the merchants in different sections of the city. Messrs. Elkins and Platt, whose influence may have determined the choice, are said to advise the removal of the Assay Office and Sub-Treasury to the same locality.

The recent advance in the price of Connellsville coke to \$1.35 per ton to furnace owners has been strictly maintained, while the demand for coke at the present time is heavier than it has been for months. Indeed, it is questionable if the shipments from the Connellsville region were ever as heavy as they are at this time. In view of this it is not strange that there is already talk of advancing the price to \$1.50 per ton on the first day of the coming month, and unless all signs fail this will be done. At the present time more than three-fourths of all the coke produced in the extensive Connellsville region is made by two firms, the H. C. Frick Coke Company and the McClure Coke Company, and of the product of these two firms more than two-thirds is made by the first-named concern. It will thus be seen that it is a much easier matter now to control prices than when the business was about equally divided between four or five firms, as it was before the Frick concern purchased the plants of the Connellsville Coke and Iron Company and the J. M. Schoonmaker Coke Company. It is not believed that it will be the policy of the H. C. Frick Coke Company to push the price up to an exorbitant figure, thus compelling many of the furnaces to either close down or run at a loss, but, on the other hand, it is the impression that the price will be placed at a figure that will allow a fair profit. Such a course will be the wiser one for all concerned.

It is reported that the Chicago, Milwaukee and St. Paul Railway Company are now making preparatory arrangements for the extension of their road from Chamberlain, Dakota, through to the Black Hills. The work will be commenced as soon as the great Sioux reservation opens. This

news is not only of importance in itself, because of the rich mineral section whose development will be stimulated by the creation of greater railroad facilities, but also because other transportation companies will be forced to enter the same field, which will thus increase railroad-building next year.

An Elevated Exhibition Building.

An architect and an engineer, Burr Ferree and L. Howard by name, propose to the world's fair committee an elaborate scheme for the erection of an iron and steel structure in the heart of the city, to cover 60 acres. According to the plan of the two writers, a series of wrought-iron or steel lattice arches would be thrown over the houses from Sixty-sixth to Sixty-seventh to Sixty-eighth streets, and so on at sufficient intervals to distribute the weight. The different series of arches would be braced and stayed each with the other, and the intervening space supported by cantilevers. The foot of the arches would be constructed after the form of an A-frame, thereby permitting unobstructed traffic in the streets. The structure, it is urged, would be light and graceful, and could be floored with iron and coated with asbestos as a protection against fire from below. Upon this would be built a superstructure in three tiers or floors of glass and iron throughout. Each tier would be devoted to a particular kind of exhibit, machinery and agriculture on the lower tier, industrial products on the second, and art and horticulture on the upper. Access to the building would be by pneumatic elevators. The whole design, with its broad, inclined planes rising from the water's edge, with its towers and its series of domes, its balconies and galleries, would form a building that would be unsurpassed in the history of the world, a structure beside which the hanging gardens of Babylon would be obscured. It would take 18 months to make the iron-work for the foundation.

Natural gas, which contributes so much to Pittsburgh's prosperity, is constantly found in new localities and at immense pressures. The new field in the vicinity of Bellevue, Fayette County, bids fair to rival the celebrated Murrysville field of Westmoreland County. The Philadelphia Company have become largely interested in the Bellevue field and will lay a pipe-line to Pittsburgh. Independent lines from this new region will also be constructed by three big iron and steel firms, viz.: Carnegie Brothers & Co., Oliver Brothers & Philipps and Jones & Laughlin. Each firm will spend about \$250,000 in laying pipe alone. It is not known how much they have invested in leases of gas land, but the amount was necessarily large. Andrew Carnegie will use the gas as a reserve for the supply at his Edgar Thomson steel works already obtained from the Murrysville field.

The Westinghouse Electric Light Company, of Pittsburgh, have been awarded a contract for lighting Allegheny City with electricity. The contract amounts to \$141,158.

The seventeenth annual industrial exposition of Chicago was opened on the 4th inst., not to be closed until the 19th of October. The number of entries is larger this year than usual, and more interest has been taken by manufacturers of machinery and other heavy products in securing space for the exhibition of their lines. The determination of the people of Chicago to secure official recognition of their city as the site of the world's fair of 1892 has probably had a great deal to do with the increased interest taken in this local ex-

position. Every effort has been put forth to make this year's show alike creditable to the city and to the Northwest.

The Baltimore and Ohio Railroad Company have decided to make close connections with the system of coke and coal roads in West Virginia. The entire coking regions of the upper Monongahela will thus be developed and enable the coke and coal to find markets at Cincinnati, Indianapolis and St. Louis, and Chicago and the lakes. Five hundred coke ovens are in course of construction along the branches of the Baltimore and Ohio. The coal fields thus opened up will be almost as large as the combined region of Pittsburgh and Connellsville.

The Harrison Natural Gas Company have been organized at Cadiz, Ohio, with a capital stock of \$25,000, for the purpose of utilizing the gas wells which have been secured at that place.

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CURRENT HARDWARE PRICES.

SEPTEMBER 11, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Ammunition.—

Caps, Percussion, & 1000—

Hicks & Goldmark's and Union Metallic Cartridge Co.	
F. L. Waterproof, 1-10's	34@35¢
E. B. Trimmed Edge, 1-10's	46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's	46@47¢
Musket Waterproof, 1-10's	50¢
G. D.	28¢
S. B. Genuine Imported	45¢
Eley's E. B.	54¢ @ 55¢
Eley's D Waterproof, Central Fire	\$1.00

Cartridges.

Rim Fire Cartridges	50¢@52¢
Rim Fire Military	10¢@12¢
Cent. Fire, Pistol and Rifle	25¢@28¢
Cent. Fire, Military and Sporting	15¢@22¢
Blank Cartridges, except 22 and 32 cal., additional 10¢ on above discounts.	
Blank Cartridges, 22 cal.	\$1.75
Blank Cartridges, 32 cal.	\$3.50
Primed Shells and Bullets	15¢@22¢
B. B. Caps, Round Ball, 1-75	2¢
B. B. Caps, Con. Ball, Swgd.	\$2.00

Primers—

Berdan Primers, \$1.00	2¢
B. L. Caps (for Sturtevant Shells) \$1.00	2¢
All other Primers, \$1.20	2¢

Shells—

First quality, 4, 8, 10 and 12 gauge	25¢@10¢@2¢
First quality, 14, 16 and 20 gauge (\$10 list)	30¢@10¢@2¢
Star, Club, Rival and Climax brands	20¢@10¢@2¢
Selbold's Comb. Shot Shells	15¢@2¢
Brass Shot Shells, 1st quality	60¢@2¢
Brass Shot Shells, Club, Rival, Climax	65¢@2¢
I. X. L. 10 and 12 gauge	40¢@10¢@2¢
"Special," 16 gauge	30¢@10¢@2¢
"Special," 10 and 12 gauge	40¢@10¢@2¢
Fowler's Pat.	\$3.25

Shells Loaded—

Standard. List	40¢@10¢@10¢@10¢
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Wads—

U. M. C. & W. R. A.—B. E., 11 up	\$2.00
U. M. C. & W. R. A.—B. E., 9&10	2.30
U. M. C. & W. R. A.—B. E., 7&8	2.60
U. M. C. & W. R. A.—P. E., 11 up	3.10
U. M. C. & W. R. A.—P. E., 9&10	4.00
U. M. C. & W. R. A.—P. E., 7&8	4.90
Eley's B. E., 11 up	\$1.75
Eley's P. E., 11 up	2.80

Anvils—

Eagle Anvil, 8" x 10"	20¢@20¢@5¢
Peter Wright's	9¢@9¢@9¢
Armstrong's Mouse Hole	8¢@8¢@8¢
Armstrong's Mouse Hole, Extra 11"	11¢@11¢@11¢
Trenton	9¢@9¢@9¢
Wilkinson's	9¢@9¢@9¢
J. & Riley Carr, Pat. Solid	11¢@11¢@11¢
Moore & Barnes Mfg. Co.	33¢@33¢@33¢

Anvil Vise and Drill—

Millers Falls Co., \$18.00	20¢
Cheney Anvil and Vise	25¢
Allen Anvil and Vise	30¢@40¢@10¢

Apple Parers—

Advance	¢ doz \$4.75
Antrim Combination	¢ doz 5.50
Baldwin	¢ doz 5.25
Champion	¢ doz 7.25
Daisy	¢ doz 4.00
Eureka, 1888	each 17.00
Family Bay State	¢ doz 12.00
Favorite	¢ doz 5.00
Gem	¢ doz 5.25
Gold Medal	¢ doz 4.00
Ideal	¢ doz 4.00
Improved Bay State	¢ doz 30.00
Little Star	¢ doz 4.50
Monarch	¢ doz 13.50
New Lightning	¢ doz 5.50
Orion	¢ doz 4.00
Penn.	¢ doz 4.00
Perfection	¢ doz 4.00
Pomona	¢ doz 4.00
Rocking Table	¢ doz 6.00
Turntable	¢ doz 4.50
Victor	¢ doz 13.50
Waverly	¢ doz 4.00
White Mountain	¢ doz 4.50
72	¢ doz 4.25
76	¢ doz 5.75
78	¢ doz 6.50

Augers and Bits—

Douglas Mfg. Co.	
Wm. A. Ives & Co.	
Humphreysville Mfg. Co.	70¢
French, Swift & Co. (F. H. Beecher, Rockford Bit Company)	
Cook's, Douglas Mfg. Co.	55¢
Cook's, N. H. Copper Co. 50¢@10¢@50¢@50¢	
Ives' Cartridge Lip	80¢
Patent Solid Head	80¢
C. E. Jennings & Co., No. 10, extension lip	40¢
C. E. Jennings & Co., No. 30	60¢
C. E. Jennings & Co., Auger Bits, 7 set, 32½ quarters, No. 5, 85; No. 30, \$3.50, 20¢	
Lewis' Patent Single Twist	45¢
Russell Jennings' Augers and Bits	35¢
Imitation Jennings' Bits	60¢@60¢@5¢
Pugh's Black	20¢
Rockford, Jennings' Pattern	60¢
Car Bits	50¢@10¢@60¢
L. Homodieu Car Bits	15¢@10¢
Forstner Pat. Auger Bits	10¢

Hollow Augers—

Ives'	33½¢
French, Swift & Co.	33½¢@10¢
Douglas'	33½¢@10¢
Bonney's Adjustable, 7 doz \$48	40¢@10¢
Stearns'	20¢@10¢
Ives' Expansive, each \$4.50	50¢@5¢
Universal Expansive, each \$4.50	20¢
Wood's	25¢@25¢@10¢

Expansive Bits—

Clarks' small, \$18; large, \$26	35¢@35¢@5¢
Ives' No. 4, 7 doz \$90	40¢
Swan's	45¢@45¢@10¢
Stearns' No. 1, \$26; No. 2, \$22	35¢
Stearns' No. 2, \$48	20¢

Gimlet Bits—

Common	¢ gross \$2.75 @ \$3.25
Diamond	¢ doz \$1.10
Ree	25¢@25¢@5¢
Double Cut, Shephardson's	45¢@45¢@10¢
Double Cut, Cl. Valley Mfg. Co.	30¢@10¢
Double Cut, Hartwell's	\$5.25
Double Cut, Douglas'	40¢@10¢
Double Cut, Ives'	60¢@60¢@10¢

Bit Stock Drills—

Morse Twist Drills	50¢@10¢@5¢
Standard	50¢@10¢@5¢
Cleveland	50¢@10¢@5¢
Syracuse, for metal	50¢@10¢
Syracuse, for wood (wood list)	30¢@30¢@5¢
Williams' or Holt's, for metal, 50¢@10¢@5¢	
Williams' or Holt's, for wood	40¢@10¢

Ship Augers and Bits—

L'Hommiedieu's	15¢@10¢@15¢@10¢@5¢
Watrous'	15¢@10¢@15¢@10¢@5¢
Snell's	15¢@10¢@15¢@10¢@5¢
Snell's Ship Auger Pat'n Car Bits	15¢@10¢@15¢@10¢@5¢

Awl Hafts—

Sewing, Brass Fer. 7 gr. \$3.50	45¢@10¢
Pat. Sewing, Short \$1.00 7 doz	40¢@10¢
Pat. Sewing, Long	¢ doz \$1.20
Pat. Peg, Plain Top, 7 gr. \$10.00	45¢@10¢
Pat. Peg, Leather Top, 7 gr. \$12.00	45¢@10¢

Awls, Brad Sets, &c—

Awls, Sewing, Common 7 gr. \$1.70, 35¢	
Awls, Should. Peg. 7 gr. \$2.45, 40¢@40¢@10¢	
Awls, Pat. Peg. 7 gr. 65¢	40¢@10¢@10¢
Awls, Shouldered Brad, 2-70 7 gr.	35¢
Awls, Handled Brad, 7 gr. 50¢	45¢
Awls, Handled Scratch 7 gr. 50¢	35¢@10¢
Awls, Socket Scratch, 7 doz, \$1.50, 25¢@30¢	

Awl and Tool Sets—

Alken's Sets, Awls and Tools	
No. 20, 7 doz \$10.00	55¢@10¢
Tray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9	25¢@25¢@10¢
Miller's Falls Adj. Tool Hds.	
Nos. 1, \$12; 2, \$18	25¢
Henry's Combination Haft	¢ doz \$6.50
Brad Sets	
No. 42, \$10.50; No. 43, \$12.50, 70¢@10¢@5¢	
Stanley's Excelsior	
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50	30¢@10¢

Axes—

Makers' and Special Brands—

First quality	¢ doz \$8.00 @ \$9.50
Others	¢ doz \$5.50 @ \$5.75

Axle Grease—

Fraser's	¢ Keg 7¢ 4¢, 7¢ 4¢, 7¢ 4¢
Fraser's, in boxes	¢ gr \$9.50
Dixon's Everlasting, in bxs.	¢ doz 1¢
Dixon's Everlasting, 10-lb pails, ea. 85¢	
Lower grades, special brands	¢ gr \$5.50 @ \$7.00

Axles—

No. 1	4¢@4¢@4¢, No. 2 5¢@5¢@5¢
Nos. 7 to 14	55¢@55¢@55¢
Nos. 15 to 18	47¢@47¢@47¢
Nos. 19 to 22	70¢
National Tubular Self-Oiling Standard	
Farm (1 to 5) and Special Farm (A1 to A5)	
Less than 10 sets	37¢@37¢@5¢
Over 10 sets	39¢@39¢@5¢

Bag Holders—

Sprengle's Pat.	¢ doz \$18
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Balances—

Spring Balances	50¢
Common 24-lb	¢ doz \$1.50
Chattillon's Spring Balances	50¢
Chattillon's Circular Spring Balances	60¢

Bells—

Hand—

Light Brass	70¢@10¢ @ 75¢
Extra Heavy	60¢@10¢
White Metal	60¢@10¢@10¢
Silver Chime	33¢@10¢
Globe (Cone's Patent)	25¢@10¢@35¢

Door—

Gong, Abbe's	33¢@10¢
Gong, Yankee	45¢@10¢
Gong, Barton's	40¢@10¢@50¢
Crank, Taylor's	25¢@10¢
Crank, Brooks'	50¢@10¢@25¢
Crank, Cone's	10¢

Crank, Connel's	20¢@10¢
Lever, Sargent's	60¢@10¢
Lever, Taylor's Bronzed or Plated	net
Lever, Taylor's Japanned	25¢@10¢
Lever, E. E. M. Co's	50¢@10¢@25¢
Pull, Brooks'	50¢@10¢@25¢
Pull, Western	25¢@10¢

Cow—

Common Wrought	60¢@10¢
Western, Sargent's list	20¢@10¢
Kentucky, "Star"	20¢@10¢
Kentucky, Sargent's list	70¢@10¢
Dodge, Genuine Kentucky	70¢@10¢
Texas Star	50¢@10¢@50¢@10¢@5¢
Call	40¢@40¢@5¢
Farm Bells	7¢ 3¢ @ 3¢ @ 4¢
Steel Alloy Church and School Bells	40¢

Belows—

Blacksmiths'	60¢@60¢@5¢
Molders'	40¢@40¢@10¢
Hand Belows	40¢@10¢@50¢

Belting, Rubber—

Common Standard	70¢@10¢
Standard	70¢@70¢@5¢
Extra	60¢@50¢@60¢@10¢
N. Y. B. & P. Co., Carbon	60¢@10¢@5¢
N. Y. B. & P. Co., Diamond	50¢@10¢

Bench Stops—

Morrill's	¢ doz \$9, 50¢
Hotchkiss's	¢ doz \$5, 10¢@10¢@10¢
Weston's, No. 1, \$10; No. 2, \$9, 25¢@10¢@5¢	
McGill's	¢ doz \$3

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.	
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Bit Holders—

Extension	
Barber's, 7 doz \$15.00	40¢@40¢@10¢
Ives, 7 doz \$20.00	60¢@50¢@60¢@10¢
Diagonal	¢ doz \$24.00, 40¢
Angular	¢ doz \$24.00, 40¢@5¢

Blind Adjusters—

Domestic	¢ doz \$3.00, 33¢@5¢
Excelsior	¢ doz \$10.00
Washburn's Self-Locking	20¢@20¢@10¢

Blind Fasteners—

Mackrell's, 7 doz \$1.00	20¢@20¢@10¢
V. S. Sargent's Screen Pat., \$15 7 gr.	60¢@10¢
Van Sand's Old Pat., \$15.00 7 gr.	55¢@10¢
Washburn's Old Pattern, 7 gr.	\$9.00
Merriman's	new list
Austin & Eddy No. 2008, 7 gr.	\$9.00
Security Gravity, 7 gr.	\$9.00

Blind Staples—

Barbed, ½ in. and larger	¢ doz 7½¢ @ 8¢
Barbed, ¾ in.	¢ doz 8½¢ @ 9¢

Blocks—

Ordinary Tackle, list May 20, 1889	50¢
Cleveland Block Co., Mal. Iron	50¢
Moore's Novelty, Mal. Iron	50¢

Bolts—

Door and Shutter—

Cast Iron Barrel, Square, &c., 70¢@70¢@10¢	
Cast Iron Shutter Bolts	70¢@70¢@10¢
Cast Iron Chain (Sargent's list)	65¢@10¢
Ives' Patent Door Bolts	60¢
Wrought Barrel	70¢@70¢@10¢
Wrought Square	70¢@70¢@10¢
Wt'r Shutter, all iron, Stanley's	60¢@10¢
Wt'r Shutter, Brass Knob	40¢@10¢
Wt'r Shutter, Sargent's list	60¢@10¢
Wt'r Sunk Flush, Sargent's list	55¢@10¢
Wt'r Sunk Flush, Stanley's list	50¢@10¢
Wt'r B.E. Flush, Com'n	55¢@10¢

Carriage, Machine, &c.—

Com. list June 10, '84	75¢@7½¢@2¢
Genuine Eagle, list Oct., '84	75¢@10¢@80¢
Phila. pattern, list Oct. 7, '84	80¢@80¢@10¢
R.B. & W., old list	70¢
Machine, according to size	80¢@80¢@5¢
Bolt Ends, according to size	80¢@80¢@5¢

Tire—

Common, list Feb. 28, '83	70¢
Port Chester Bolt and Nut Company	
Empire, list Feb. 28, '83	70¢
Phila., list Oct. '84	82¢@5¢
Keystone, Philadel., list Oct. '84	80¢
Norway, Phila., list Oct. '84	75¢@10¢
American Screw Company	
Norway, Phila., list Oct. 16, '84	75¢@10¢
Eagle, Phila., list Oct. 16, '84	80¢
Phila., list Oct. 16, '84	82¢@5¢
Bay State, list Feb. 28, '83	70¢
R.B. & W., Philadel., list Oct. 16, '84	82¢@5¢

Store and Plow—

Stove	65¢
Plow	60¢@5¢
R. B. & W., Plow	55¢

Borax—

Without	¢ doz 9½¢ @ 10½¢
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Boring Machines—

Without	
Augers	
Douglas	\$5.50 \$6.75
Snell's, Rice's Pat.	5.50 6.75
Jennings	5.50 6.75
Other Machines	2.35 2.75
Phillips' Patent	net
with Augers	00 7.50

Bow Pins—

Cards—

Horse & Curry.....10&10@10&10&105
Cotton.....10&10@10&105
Wool.....10&10@10&105

Carpet Stretchers—

Cast Steel, Polished.....\$ doz \$2.25
Cast Iron, Steel Points.....\$ doz \$2.00
Socket.....\$ doz \$1.75
Bullard's.....25@25&105

Carpet Sweepers—

Blissell No. 5.....\$ doz \$17.00
Blissell No. 7 New Drop Pan.....\$ doz \$19.00
Blissell, Grand.....\$ doz \$36.00
Grand Rapids.....\$ doz \$24.00
Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00
Magic.....\$ doz \$15.00
Jewel.....\$ doz \$17.00
Improved Parlor Queen.....\$ doz \$27.00
Nickel.....\$ doz \$24.00
Japanned.....\$ doz \$22.00
Excelior.....\$ doz \$18.00
Garland.....\$ doz \$18.00
Arlor Queen.....\$ doz \$15.00
Housewife's Delight.....\$ doz \$15.00
Queen.....\$ doz \$16.00
Queen, with band.....\$ doz \$18.00
King.....\$ doz \$30.00
Weed, Improved.....\$ doz \$18.00
Hub.....\$ doz \$16.00
Cog-Wheel.....\$ doz \$22.00
Conqueror.....\$ doz \$22.00
Easy.....\$ doz \$22.00
Monarch.....\$ doz \$22.00
Goshen.....\$ doz \$21.00
Advance.....\$ doz \$18.00
Ladies' Friend, No. 1, \$ doz, \$15.00; No. 2, \$ doz, \$16.00
American.....\$ doz \$15.00
Grand Republic.....\$ doz \$35.00

Cartridges—

See Ammunition.

Casters—

Bed.....\$ Brass, 55@55&112
Plate.....\$ Others, 60@60&102
Shallow Socket.....\$ 40&104
Deep Socket.....\$ 30&10&40
Yale Casters, list May, 1884.....\$ 60&60&5
Yale, Gem.....\$ 45&10&50
Martin's Patent (Phoenix).....\$ 60&60&104
Payson's Anti-friction.....\$ 30
Giant Truck Casters.....\$ 50&104
Stationary Truck Casters.....\$ 50
Socket Truck Casters.....\$ 50

Cattle Leaders—

Humason, Beckley & Co.'s.....\$ 70
Sargent's.....\$ 60&10
Hotchkiss.....\$ 30
Peck, Stow & W. Co.....\$ 50&105

Chain—

Trace, 6 1/2-10-2, exact, \$ pair, \$1.03.....\$ 50&10@50&10&5
Trace, 6 1/2-10-3, exact, \$ pair 92¢.....\$ 50&10@50&10&5
Trace, 7-10-2, exact, \$ pair \$1.11.....\$ 50&10@50&10&5
NOTE.—Traces, "Regular" sizes, 3¢ net
Log Fifth Stretcher, and other fancy Chains, list Nov. 1, 1884.....\$ 50&10@50&10&5
American Coll. in cask lots, 3-16 1/2, 5-16 1/2, 8-16 1/2, 10-16 1/2, 12-16 1/2, 14-16 1/2, 16-16 1/2, 18-16 1/2, 20-16 1/2, 22-16 1/2, 24-16 1/2, 26-16 1/2, 28-16 1/2, 30-16 1/2, 32-16 1/2, 34-16 1/2, 36-16 1/2, 38-16 1/2, 40-16 1/2, 42-16 1/2, 44-16 1/2, 46-16 1/2, 48-16 1/2, 50-16 1/2, 52-16 1/2, 54-16 1/2, 56-16 1/2, 58-16 1/2, 60-16 1/2, 62-16 1/2, 64-16 1/2, 66-16 1/2, 68-16 1/2, 70-16 1/2, 72-16 1/2, 74-16 1/2, 76-16 1/2, 78-16 1/2, 80-16 1/2, 82-16 1/2, 84-16 1/2, 86-16 1/2, 88-16 1/2, 90-16 1/2, 92-16 1/2, 94-16 1/2, 96-16 1/2, 98-16 1/2, 100-16 1/2, 102-16 1/2, 104-16 1/2, 106-16 1/2, 108-16 1/2, 110-16 1/2, 112-16 1/2, 114-16 1/2, 116-16 1/2, 118-16 1/2, 120-16 1/2, 122-16 1/2, 124-16 1/2, 126-16 1/2, 128-16 1/2, 130-16 1/2, 132-16 1/2, 134-16 1/2, 136-16 1/2, 138-16 1/2, 140-16 1/2, 142-16 1/2, 144-16 1/2, 146-16 1/2, 148-16 1/2, 150-16 1/2, 152-16 1/2, 154-16 1/2, 156-16 1/2, 158-16 1/2, 160-16 1/2, 162-16 1/2, 164-16 1/2, 166-16 1/2, 168-16 1/2, 170-16 1/2, 172-16 1/2, 174-16 1/2, 176-16 1/2, 178-16 1/2, 180-16 1/2, 182-16 1/2, 184-16 1/2, 186-16 1/2, 188-16 1/2, 190-16 1/2, 192-16 1/2, 194-16 1/2, 196-16 1/2, 198-16 1/2, 200-16 1/2, 202-16 1/2, 204-16 1/2, 206-16 1/2, 208-16 1/2, 210-16 1/2, 212-16 1/2, 214-16 1/2, 216-16 1/2, 218-16 1/2, 220-16 1/2, 222-16 1/2, 224-16 1/2, 226-16 1/2, 228-16 1/2, 230-16 1/2, 232-16 1/2, 234-16 1/2, 236-16 1/2, 238-16 1/2, 240-16 1/2, 242-16 1/2, 244-16 1/2, 246-16 1/2, 248-16 1/2, 250-16 1/2, 252-16 1/2, 254-16 1/2, 256-16 1/2, 258-16 1/2, 260-16 1/2, 262-16 1/2, 264-16 1/2, 266-16 1/2, 268-16 1/2, 270-16 1/2, 272-16 1/2, 274-16 1/2, 276-16 1/2, 278-16 1/2, 280-16 1/2, 282-16 1/2, 284-16 1/2, 286-16 1/2, 288-16 1/2, 290-16 1/2, 292-16 1/2, 294-16 1/2, 296-16 1/2, 298-16 1/2, 300-16 1/2, 302-16 1/2, 304-16 1/2, 306-16 1/2, 308-16 1/2, 310-16 1/2, 312-16 1/2, 314-16 1/2, 316-16 1/2, 318-16 1/2, 320-16 1/2, 322-16 1/2, 324-16 1/2, 326-16 1/2, 328-16 1/2, 330-16 1/2, 332-16 1/2, 334-16 1/2, 336-16 1/2, 338-16 1/2, 340-16 1/2, 342-16 1/2, 344-16 1/2, 346-16 1/2, 348-16 1/2, 350-16 1/2, 352-16 1/2, 354-16 1/2, 356-16 1/2, 358-16 1/2, 360-16 1/2, 362-16 1/2, 364-16 1/2, 366-16 1/2, 368-16 1/2, 370-16 1/2, 372-16 1/2, 374-16 1/2, 376-16 1/2, 378-16 1/2, 380-16 1/2, 382-16 1/2, 384-16 1/2, 386-16 1/2, 388-16 1/2, 390-16 1/2, 392-16 1/2, 394-16 1/2, 396-16 1/2, 398-16 1/2, 400-16 1/2, 402-16 1/2, 404-16 1/2, 406-16 1/2, 408-16 1/2, 410-16 1/2, 412-16 1/2, 414-16 1/2, 416-16 1/2, 418-16 1/2, 420-16 1/2, 422-16 1/2, 424-16 1/2, 426-16 1/2, 428-16 1/2, 430-16 1/2, 432-16 1/2, 434-16 1/2, 436-16 1/2, 438-16 1/2, 440-16 1/2, 442-16 1/2, 444-16 1/2, 446-16 1/2, 448-16 1/2, 450-16 1/2, 452-16 1/2, 454-16 1/2, 456-16 1/2, 458-16 1/2, 460-16 1/2, 462-16 1/2, 464-16 1/2, 466-16 1/2, 468-16 1/2, 470-16 1/2, 472-16 1/2, 474-16 1/2, 476-16 1/2, 478-16 1/2, 480-16 1/2, 482-16 1/2, 484-16 1/2, 486-16 1/2, 488-16 1/2, 490-16 1/2, 492-16 1/2, 494-16 1/2, 496-16 1/2, 498-16 1/2, 500-16 1/2, 502-16 1/2, 504-16 1/2, 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672-16 1/2, 674-16 1/2, 676-16 1/2, 678-16 1/2, 680-16 1/2, 682-16 1/2, 684-16 1/2, 686-16 1/2, 688-16 1/2, 690-16 1/2, 692-16 1/2, 694-16 1/2, 696-16 1/2, 698-16 1/2, 700-16 1/2, 702-16 1/2, 704-16 1/2, 706-16 1/2, 708-16 1/2, 710-16 1/2, 712-16 1/2, 714-16 1/2, 716-16 1/2, 718-16 1/2, 720-16 1/2, 722-16 1/2, 724-16 1/2, 726-16 1/2, 728-16 1/2, 730-16 1/2, 732-16 1/2, 734-16 1/2, 736-16 1/2, 738-16 1/2, 740-16 1/2, 742-16 1/2, 744-16 1/2, 746-16 1/2, 748-16 1/2, 750-16 1/2, 752-16 1/2, 754-16 1/2, 756-16 1/2, 758-16 1/2, 760-16 1/2, 762-16 1/2, 764-16 1/2, 766-16 1/2, 768-16 1/2, 770-16 1/2, 772-16 1/2, 774-16 1/2, 776-16 1/2, 778-16 1/2, 780-16 1/2, 782-16 1/2, 784-16 1/2, 786-16 1/2, 788-16 1/2, 790-16 1/2, 792-16 1/2, 794-16 1/2, 796-16 1/2, 800-16 1/2, 802-16 1/2, 804-16 1/2, 806-16 1/2, 808-16 1/2, 810-16 1/2, 812-16 1/2, 814-16 1/2, 816-16 1/2, 818-16 1/2, 820-16 1/2, 822-16 1/2, 824-16 1/2, 826-16 1/2, 828-16 1/2, 830-16 1/2, 832-16 1/2, 834-16 1/2, 836-16 1/2, 838-16 1/2, 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1314-16 1/2, 1316-16 1/2, 1318-16 1/2, 1320-16 1/2, 1322-16 1/2, 1324-16 1/2, 1326-16 1/2, 1328-16 1/2, 1330-16 1/2, 1332-16 1/2, 1334-16 1/2, 1336-16 1/2, 1338-16 1/2, 1340-16 1/2, 1342-16 1/2, 1344-16 1/2, 1346-16 1/2, 1348-16 1/2, 1350-16 1/2, 1352-16 1/2, 1354-16 1/2, 1356-16 1/2, 1358-16 1/2, 1360-16 1/2, 1362-16 1/2, 1364-16 1/2, 1366-16 1/2, 1368-16 1/2, 1370-16 1/2, 1372-16 1/2, 1374-16 1/2, 1376-16 1/2, 1378-16 1/2, 1380-16 1/2, 1382-16 1/2, 1384-16 1/2, 1386-16 1/2, 1388-16 1/2, 1390-16 1/2, 1392-16 1/2, 1394-16 1/2, 1396-16 1/2, 1398-16 1/2, 1400-16 1/2, 1402-16 1/2, 1404-16 1/2, 1406-16 1/2, 1408-16 1/2, 1410-16 1/2, 1412-16 1/2, 1414-16 1/2, 1416-16 1/2, 1418-16 1/2, 1420-16 1/2, 1422-16 1/2, 1424-16 1/2, 1426-16 1/2, 1428-16 1/2, 1430-16 1/2, 1432-16 1/2, 1434-16 1/2, 1436-16 1/2, 1438-16 1/2, 1440-16 1/2, 1442-16 1/2, 1444-16 1/2, 1446-16 1/2, 1448-16 1/2, 1450-16 1/2, 1452-16 1/2, 1454-16 1/2, 1456-16 1/2, 1458-16 1/2, 1460-16 1/2, 1462-16 1/2, 1464-16 1/2, 1466-16 1/2, 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Molasses Gates—		Birmingham Plane Co. 50¢ 50¢ 55¢	Fort Madison Steel Tooth Lawn Rake, 25¢	Atkins' Silver Steel Diamond X Cuts
Stebbin's Pat. 70¢ 70¢ 75¢		Gage Tool Co.'s Self-Setting 20¢ 10¢	Razors—	Atkins' Special Steel Dexter X Cuts
Stebbin's Genuine 60¢ 10¢ 10¢		Chaplin's Iron Planes 40¢ 40¢ 45¢	J. R. Torrey Razor Co. 20¢	Atkins' Special Steel Diamond X Cuts
Stebbin's Tinned Ends 40¢ 10¢		Sargent's 30¢ 10¢ 30¢ 10¢ 10¢	Wootenholme and Butcher, \$10.00 to £	Atkins' Champion and Electric Tooth
Chase's Hard Metal 30¢ 10¢		Plane Irons—	10¢	X Cuts, foot 24¢ 25¢
Bush's 20¢		Plane Irons, Butcher's \$5.00 to \$5.25 to 2	Razor Straps—	Atkins' Hollow Back X Cuts, foot 18¢
Lincoln's Pattern 70¢ 70¢ 10¢		Plane Irons, Buck Bros. 30¢	Genuine Emerson 60¢ 60¢ 5¢	Atkins' Mulay, Mill and Drag, 40¢ 10¢
Wood's 20¢ 10¢		Plane Irons, Auburn Tool Co., "This-	Imitation foot 22.00, 20¢ 10¢ 5¢	Atkins' One-Man Saw, with handles,
Boss, per doz:		tle 40¢	Torrey's 30¢	W. M. & C., Hand, 30¢ 5¢ 30¢ 10¢
Nos. 1, 7; No. 2, 8; No. 3, 9; No. 4		Sandusky Tool Co. 30¢	Badger's Belt and Com. foot 22.00	W. M. & C., Champion X Cuts, Regu-
\$10. 60¢ 10¢ 10¢		Single and Cut 10¢	Lamont Combination foot 24¢ 26¢	W. M. & C. X Cuts, Thin Back, foot 27¢ 29¢
Money Drawers—		Double 10¢	Rivets and Burrs—	Peace Circular and Mill, 45¢ 10¢
Safety per doz, \$3.00, 25¢		L. & I. J. White 25¢	Iron, list Nov. 17, '87 50¢	Peace Hand Panel and Rip 20¢ 10¢ 20¢ 10¢ 10¢
Nails, see Trade Report.		Pliers and Nippers—	Copper 50¢ 10¢ 60¢	Peace Cross Cuts, Standard, foot 25¢
Wire Nails, Paped.		Button's Patent 30¢ 10¢ 40¢	50¢ 10¢	Peace Cross Cuts, Thin Back, foot 27¢ 28¢
Association list, July 15, 1889.		Hall's No. 2, 5 in., \$13.50; No. 4, 7 in.,	Rods—	Richardson's Circular and Mill
70¢ 10¢ 10¢ 70¢ 10¢ 10¢ 5¢		\$21.00 per doz 50¢ 50¢ 10¢	Stair, Brass 25¢ 2¢	Richardson's X Cuts, No. 1, 30¢; No. 2, 27¢; No. 3, 24¢
Tack Mfrs' list, 70¢ 70¢ 5¢		Humason & Beckley Mfg. Co. 50¢ 50¢ 10¢	Stair, Black Walnut foot 40¢	Hack Saws—
Wire Nails, Standard Penny		Gas Pliers, Custer's Nickel Plated, 60¢ 5¢	Rivet Sets.	Griffin's complete, 40¢ 10¢ 50¢
Card June 1, '89, base, \$2.40 to \$2.50		Eureka Pliers and Nippers 40¢	Stair, Black Walnut foot 40¢	Griffin's Hack Saw, Blades, 40¢ 10¢ 50¢
Nail Puller—		Russell's Parallel, 25¢	Rollers—	Star Hack Saws and Blades, 25¢
Curtiss Hammer, per doz \$9.00		P. S. & W. Cast Steel 40¢	Barn Door, Sargent's list 60¢ 10¢ 10¢	Diamond Hack Saws and Blades, 25¢
Curtiss Hammer, No. 1, per doz \$30.00, 10¢		P. S. & W. Tinner's Cutting Nippers, add 6¢ dis 10¢	Acme Moore's Anti-Friction 55¢	Eureka and Crescent 25¢
Pelican, per doz, \$9.00, 25¢		Carew's Pat. Wire Cutters, 20¢	Union Barn Door Roller 70¢	Saw Frames—
Boss, per doz, \$30.00, 30¢		Cronk's 8 in., \$15.00; 10 in., \$21.00, 40¢ 40¢ 5¢	Rope—	White Vermont, per \$9.00 to \$10.00
Lightning, per doz \$21.00		Plumbs and Levels—	Manufacturers' prices for large lots:	Red, Polished and Varished, per doz \$1.50, 25¢
Nail Sets—		Regular List 70¢ 10¢ 70¢ 10¢ 10¢	Manila, 1/2 in. and larger, 13¢	Saw Sets—
Square, per gr., \$4.00 to \$4.25		Disston's, 45¢ 10¢	Manila, 1/4 and 5/16 in., 13¢ 1/2	Stillman's Genuine, per doz \$5.00 to \$7.75, 40¢ 5¢
Round, per gr., \$3.25		Pocket Levels, 70¢ 10¢ 70¢ 10¢ 10¢	Manila Tarred Rope, 12¢	Stillman's Imita, per doz \$3.25 to \$5.25, 40¢ 5¢ 40¢ 10¢
Cannon's Diamond Point, per gr., \$12, 20¢		Lavis Iron Levels, 30¢	Manila Hay Rope, 13¢	Common Lever, per doz \$2.00, 40¢ 5¢
Nut Crackers—		Davis' Inclunometers 10¢ 10¢	Sisal, 1/2 inch and larger, 11¢	Morrill's No. 1, \$15.00; Nos. 3 & 4, \$24.00, 40¢ 10¢ 50¢
Table (H. & B. Mfg. Co.), 40¢		Polish, Metal.	Sisal, 3/8 and 1/2 in., 11¢ 1/2	Leach's, No. 0, \$8.00; No. 1, \$15, 15¢ 20¢
Blake's Pattern, per doz \$2.00, 10¢		Prestoline, 20¢ 10¢	Sisal, 5/8 and 3/4 in., 11¢ 1/2	Nash's, 20¢ 10¢ 20¢ 10¢ 10¢
Turner & Seymour Mfg. Co., 50¢		Prestoline Paste, 33¢ 1/2	Sisal, Hay Rope, 11¢	Hammer, Hotchkiss, \$5.50, 10¢
Nuts—		Gaston's Silver Compound, 33¢ 1/2	Sisal, Tarred Rope, 10¢ 1/2	Hammer, Bemis & Call Co.'s new Pat., 30¢ 5¢
Nuts, off list Jan. 1, 1888: Square, Hex,		Pokes, Animal—	Sisal, Medium Lathe Yarn, 10¢	Bemis & Call Co.'s Lever and Spring
Hot Pressed, 5¢ 4¢ 5¢		Bishop's I. K. L., per doz \$6.50	Cotton Rope 15¢ 18¢ net	Hammer, 30¢ 5¢
Cold Punched, 5¢ 4¢ 5¢		Bishop's O. O., per doz \$5.50	Jute Rope 15¢ 18¢ net	Bemis & Call Co.'s Plate, 10¢
In lots less than 100 lb, per lb, add 1/2¢; 1-b		Bishop's Pioneer, per doz \$3.75	Rules—	Bemis & Call Co.'s Cross Cut, 12¢ 1/2
boxes, add 1¢ to list.		Bishop's American, per doz \$3.00	Boxwood, 80¢ 10¢ 10¢ 80¢ 10¢ 10¢ 5¢	Alken's Genuine, \$13.00, 50¢ 10¢
Oakum—		Poppers, Corn—	Ivory, 50¢ 50¢ 10¢	Alken's Imitation, \$7.00, 55¢ 5¢
Government, per lb 7¢ 7¢ 7¢		Round or Square, 1 qt., per gr \$12.00 to \$15.00	Starrett's Rules and Straight Edges, 25¢ 10¢	Alken's Pat. Lever, 20¢
U. S. Navy, per lb 6¢ 6¢ 6¢		Round or Square, 2 qt., per gr \$25.00 to \$26.00	Sad Irons—	Disston's Star, No. 15, \$5.50; 20¢
Navy, per lb 5¢ 5¢ 5¢		Post Hole and Tree Augers	From 4 to 10, at factory 100 lb	Atkin's Lever, per doz No. 1, \$6.00; No. 2, \$6.00
Oilers—		and Diggers—	Self-Heating, \$2.40 to \$2.55	Atkin's Criterion, per doz \$7.50
Zinc and Tin 65¢ 65¢ 10¢		Samson Post Hole Digger, per doz \$36.00, 25¢ 10¢	Fox Reversible, Self-Fluter per doz \$24.00	Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00, 40¢ 10¢
Brass and Copper 50¢ 10¢ 50¢ 10¢ 5¢		Fletcher Post Hole Augers, per doz \$38, 20¢	Chinese Laundry (N.E. Butt Co.) 8 1/2¢, 15¢	Avery's Saw Set and Punch, 50¢
Malleable, Hammers' Improved, No. 1,		Eureka Diggers, per doz \$16.00 to \$17.00	New England, 5¢, 15¢	Am. Tool Co.'s Superior, per doz \$15.50
\$3.00; No. 2, \$4.00; No. 3, \$4.40, 10¢ 10¢ 10¢		Leed's per doz \$8.00 to \$9.00	Mahony's Troy Pol. Irons, 25¢	
Malleable, Hammers, Old Pattern, same		Vaughan's Post Hole Auger, \$13.00 to \$14.00	Sensible, 20¢ 20¢ 5¢	
list 40¢		Kohler's Little Giant, per doz \$18.00	National Self-Heating, 30¢	
Prior's Pat. or "Paragon" Zinc, 60¢ 10¢ 10¢		Kohler's Hercules, per doz \$15.00	Sand and Emery Paper and	
Prior's Pat. or "Paragon" Brass, 50¢		Kohler's New Champion, per doz \$9.00	Cloth—	
Olmstead's Tin and Zinc, 50¢		Schneider, per doz \$18.00	List April 19, 1886, 50¢ 50¢ 10¢	
Olmstead's Brass and Copper, 50¢		Ryan's Post Hole Diggers, per doz \$24.00	Sibley's Emery and Crocus Cloth, 30¢	
Broughton's Zinc, 60¢		Cronk's Post Bars, per doz \$6.00, 50¢ 50¢ 50¢ 10¢	Sash Cord—	
Broughton's Brass, 50¢		Gibbs Post Hole Digger, per doz \$30.00, 50¢	Common, 10¢ 10¢ 11¢	
Gem P. D. & Co., per gr. \$2		Imperial, per doz, \$15. 45¢	Patent, good quality, 13¢ 13¢ 1/2	
Packing, Steam—		Potato Parers—	White Cotton Braided, fair, 28¢ 20¢	
Rubber—		White Mountain, per doz \$5.00 to \$5.50	Common Russia Sash, 13¢ 1/2	
Standard 60¢ 10¢ 60¢ 10¢ 10¢		Antrim Combination, per doz \$8.00	Patent 15¢	
Extra 60¢ 10¢ 60¢		Hoosier, per doz \$13.50	Cable Laid Italian Sash, 22¢ 20¢	
N. Y. B. & P. Co., Standard, 50¢ 10¢ 5¢		Pruning Hooks and Shears—	India Cable Laid 13¢	
N. Y. B. & P. Co., Empire, 70¢		Disston's Combined Pruning Hook and	Silver Lake—	
N. Y. B. & P. Co., Salamander, 70¢		Saw, 20¢ 10¢ 20¢ 10¢	A Quality, White, 50¢, 10¢ 10¢ 5¢	
Jenkins' Standard, per lb 65¢, 30¢		Disston's Pruning Hook, per doz \$12.00, 20¢ 10¢	A Quality, Drab, 55¢, 10¢ 10¢ 5¢	
Miscellaneous—		E. S. Lee & Co.'s Pruning Tools, 40¢	B Quality, White, 50¢, 20¢ 10¢ 5¢	
American Packing, 10¢ 10¢ 11¢		Pruning Shears, Henry's Pat, per doz \$3.75 to \$4.00 net	B Quality, Drab, 55¢, 20¢ 10¢ 5¢	
Russia Packing, 14¢ 14¢		Henry's Pruning Shears, per doz \$4.25 to \$4.50 net	C Quality, White (only), 26¢ 26¢ 28¢	
Italian Packing, 15¢ 15¢ 17¢		Wheeler, M. & C. Co.'s Combination, per doz \$12.00, 20¢	Sylvan Spring, Extra Braided, White, 34¢	
Cotton Packing, 15¢ 15¢ 17¢		J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25	Sylvan Spring, Extra Braided, Drab, 30¢	
Jute, 7¢ 8¢ 8¢		Pulleys—	Semper Item, Braided, White, 30¢	
Padlocks—		Hot House, Awning, &c, 60¢ 10¢	Egyptian, India Hemp, Braided, 25¢	
See Locks.		Japanned Screw, 60¢ 10¢	Sash Locks—	
Pails—		Brass Screw, 60¢ 10¢	Clark's, No. 1, \$10; No. 2, \$8 per gr., 33¢ 1/2	
Galvanized Iron—		Japanned Slide, 60¢ 10¢	Ferguson's, 33¢ 1/2	
Quarts 10 12 14		Japanned Clothes Line, 60¢ 10¢	Morris and Triumph, list Aug. 16, 1886, 60¢ 25¢	
Hill's Light Weight, per doz, \$2.75 3.00 3.25		Empire Sash Pulley, 55¢ 60¢	Victor, 60¢ 10¢ 25¢	
Hill's Heavy Weight, per dz, 3.00 3.25 3.75		Moore's Sash, Anti-Friction, 50¢	Walker's, 10¢	
Whitling's, 2.75 3.00 3.25		Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50, 50¢ 10¢ 50¢ 10¢ 5¢	Attwell Mfg. Co., 33¢ 1/2	
Sidney Shephard & Co., 2.80 3.00 3.40		Hay Fork, "Anti-Friction," 5 in. Solid, \$5.70, 50¢ 10¢ 50¢ 10¢ 5¢	Reading, 60¢ 10¢ 60¢ 10¢ 10¢	
Iron Clad, 2.75 3.00 3.25		Hay Fork, "F" Common and Pat. Bushed, 20¢	Hammond's Window Springs, 40¢	
Fire Buckets, 2.75 3.25 3.50		Hay Fork, Tarbox Pat. Iron, 20¢	Common Sense, Jap'd, Cop'd and Br'd., per gr \$4.00	
Buckets, see Well Buckets.		Hay Fork, Reed's Self-Lubricating, 60¢	Common Sense, Nickel Plated, per gr \$10.00	
Indurated Fibre Ware—25¢		Shade Rack, 45¢	Universal, 30¢	
Star Pails, 12 qt, per doz \$6.00		Tackle Blocks, see Blocks	Kempshall's Gravity, 60¢	
Star, Stable and Milk, 14 qt, per doz \$7.80		Moore's Anti-Friction 5 in. Wheel, per doz \$12.00, 40¢	Kempshall's Model, 60¢ 60¢ 10¢	
Standard Fibre Ware—		Clarnet, Best Makers, 60¢ 60¢ 10¢	Corbin's Daisy, list Feb. 15, 1886, 70¢	
Plain, Deer'd		Pitcher Spout, Best Makers, 67¢ 1/2 to 70¢	Payson's Perfect, 60¢ 60¢ 10¢	
Water Pails, 12 qt., per doz, \$4.00 \$4.50		Punches—	Hugulin's New Sash Locks, 25¢ 5¢ 25¢	
Dairy Pails, 14 qt., per doz, \$4.50 5.00		Saddlers' or Drive, good, per doz, 60¢ 65¢	Stoddard "Practical" 10¢	
Fire Pails, No. 1, 12 qt. per doz, 5.00		Bemis & Call Co.'s Cast Steel Drive, 50¢ 5¢	Ives' Patent, 60¢ 60¢ 10¢	
Fire Pails, No. 2, 14 qt. per doz, 4.50		Bemis & Call Co.'s Springfield Socket, 50¢ 5¢	Liesche's, Nos. 100 and 110, per gr \$8; 105, \$10.00, 20¢ 10¢	
Pencils—		Spring, good quality, per doz \$2.50 to \$2.60	Davis, Bronze, Barnes Mfg. Co., 50¢	
Faber's Carpenters', high list 50¢		Spring, Leach's Pat, 15¢	Champion Safety, list March 1, 1888, 55¢ 55¢ 5¢	
Dixon's Round Gilt, per gr \$5.25		Solid Tinner's, per doz \$1.44, 55¢	Security, 70¢	
Dixon's Lead, per gr \$4.50		Tinner's Hollow Punches, 20¢ 25¢	Buckeye, per gr \$4.80	
Dixon's Lumber, per gr \$5.75		Rice Hand Punches, 15¢	Sash Weights—	
Dixon's Carpenters', 40¢ 10¢		Avery's Revolving, 40¢	Solid Eyes, per ton \$22.00	
Picks—		Avery's Saw-Set and Punch. See Saw Sets.	Sausage Stuffers or Fillers—	
Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00, 60¢ 60¢ 10¢		Rail—	Miles' "Challenge," per doz \$20, 50¢ 50¢ 5¢	
Picture Nails—		Sliding Door, Wr't Brass, per 35¢, 15¢	Perry, per doz, No. 1, \$15.00; No. 0, \$21.00, 50¢ 50¢ 50¢ 10¢	
Brass Head, Sargent's list, 50¢ 10¢ 10¢		Sliding Door, Bronze Wr't Iron, per ft. 7¢	Draw Cut No. 4, each \$30.00, 30¢	
Brass Head, Combination list, 50¢ 10¢		Sliding Door, Iron, Painted, per foot 4¢, 40¢	Enterprise Mfg. Co., 20¢ 10¢ 30¢	
Porcelain Head, Sargent's list, 50¢ 10¢ 10¢		Barn Door, Light, lb, 4¢	Silver's, 40¢ 10¢	
Porcelain Head, Combination list, 40¢ 10¢		Per 100 feet, \$2.00 2.50 3.10, 10¢	Saws—	
Niles' Patent, 40¢		B. D. for N. E. Hangers—	Disston's Cir- 45¢ 45¢ 5¢	
Pinking Irons—		Small, Med. Large, \$2.15 2.70 3.25, net	Disston's Cross, 45¢ 45¢ 5¢	
Pipe, Wrought Iron—		Terry's Wrought Iron, per foot, 45¢ 45¢	Cuts, 45¢ 45¢ 5¢	
List March 23, 1887.		Victor Track Rail, 7 1/2 per foot, 50¢ 25¢	Disston's Hand 25¢ 25¢ 5¢	
1 1/2 and under, Plain, 40¢		Moore's Wrought Iron, 25¢	Atkins' Circular Shingle and Heading, 50¢ 10¢	
1 1/2 and under, Galvanized, 52¢ 1/2		Rakes—		
1 1/2 and over, Plain, 62¢ 1/2		Cast Steel, Association goods, 65¢		
1 1/2 and over, Galvanized, 50¢		Cast Steel, outside goods, 70¢ 70¢ 5¢		
Boiler Tubes, Iron, 52¢ 1/2		Malleable, 70¢ 70¢ 5¢		
1 1/2 and under, 52¢ 1/2		Gibbs Lawn Rake, \$12.00, 50¢ 15¢		
2 in. and larger, 57¢ 1/2		Canton Lawn Rake, \$9.00, 50¢ 10¢		
Planes and Plane Irons—		Ft. Madison Prize Bow Brace and Peerless, 65¢		
Wood Planes—				
Molding, 50¢ 10¢ 60¢ 5¢				
Bench, First Quality, 60¢ 60¢ 5¢				
Bench, Second Quality, 60¢ 10¢ 10¢ 70¢				
Bailey's (Stanley R. & L. Co.), 40¢ 10¢				
Iron Planes—				
Bailey's (Stanley R. & L. Co.), 40¢ 10¢				
Miscellaneous Planes (Stanley R. & L. Co.), 20¢ 10¢				
Victor Planes (Stanley R. & L. Co.), 30¢ 10¢				
Steer's Iron Planes, 35¢ 35¢ 5¢				
Meriden Mail Iron Co., 30¢ 10¢ 30¢ 10¢ 10¢				
Davis' Iron Planes, 30¢ 10¢ 30¢ 10¢ 10¢				

Machine—	
Flat Head, Iron.....	55¢
Round Head, Iron.....	50¢
Bench and Hand—	
Bench, Iron.....	55¢10¢55¢10¢10¢
Bench, Wood, Beech.....	70¢
Bench, Wood, Hickory.....	70¢
Hand, Wood.....	55¢10¢25¢10¢5¢
Lag, Blunt Point, according to size.....	80¢80¢5¢
Cone and Lag, Gimlet Point.....	75¢
Red.....	25¢5¢
Hand Rail, Sargent's.....	60¢10¢
Hand Rail, H. & B. Mfg. Co.....	70¢10¢75¢
Hand Rail, Am. Screw Co.....	75¢
Jack Screws, Millers Falls list.....	50¢50¢5¢
Jack Screws, P. S. & W.....	35¢
Jack Screws, Sargent.....	60¢10¢60¢10¢5¢
Jack Screws, Stearns.....	40¢40¢10¢
Scroll Saws—	
Lester, complete, \$10.00.....	25¢
Rogers, complete, \$4.00.....	25¢
Barnes' Builders' and Cabinet Makers.....	\$15
Barnes' Scroll Saw Blades.....	35¢
Seythe Snaths—	
Shears—	
American (Cast) Iron.....	75¢10¢75¢10¢5¢
Pruning.....	See Pruning Hooks and Shears
Barnard's Lamp Trimmers.....	20¢35¢
Tinners.....	20¢25¢
Seymour's, List, Dec., 1881.....	60¢10¢10¢60¢10¢10¢
Heinrich's, List, Dec., 1881.....	10¢10¢
Heinrich's Tailor's Shears.....	33¢
First quality C. S. Trimmers.....	80¢80¢10¢
Second quality C. S. Trimmers.....	80¢10¢80¢10¢10¢
Acme Cast Shears.....	10¢10¢
Diamond Cast Shears.....	10¢10¢
Clippers.....	10¢10¢
Victor Cast Shears.....	75¢10¢75¢10¢5¢
Howe Bros. & Hulbert, Solid Forged Steel.....	40¢
Chicago Drop Forge & F. Co., Solid Steel Forged.....	60¢
Clauss Shear Co., Japaned.....	70¢
Clauss Shear Co., Nickel, same list.....	60¢
Sheaves—	
Sliding Door—	
M. W. Co., list July, 1888.....	50¢10¢60¢5¢
R. & E., list Dec. 18, 1885.....	55¢20¢
Corbin's list.....	60¢10¢25¢
Patent Roller.....	60¢10¢25¢
Patent Roller, Hatfield's.....	75¢
Russell's Anti-Friction, list Dec., 1885.....	60¢25¢
Moore's Anti-Friction.....	50¢
Sliding Shutter—	
R. & E. list Dec. 18, 1885.....	60¢10¢25¢
Sargent's list.....	60¢10¢
Reading list.....	60¢10¢10¢
Ship Tools—	
L. & I. J. White.....	20¢5¢
Albertson Mfg. Co.....	25¢
Shoes, Horse, Mule, &c.—	
Horse—	
Burden's, Perkins', Phoenix, at factory.....	\$4.00
Mule—	
Add \$1 per keg to above prices.	
Or, Wrought—	
Ton lots.....	\$10.00
1000 lb. lots.....	\$10.00
500 lb. lots.....	\$10.00
Shot—	
(Eastern prices 2¢ off, cash, 5 days.)	
Drop, 25 bag, 25 lb.....	\$1.25
Drop, 5 bag, 5 lb.....	30
Buck and Chilled, 25 lb bag.....	1.50
Buck and Chilled, 5 lb bag.....	35
Shovels and Spades—	
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....	20¢
NOTE.—Jobbers frequently give 5% extra on above.	
Griffith's Black Iron.....	50¢10¢
Griffith's C. S.....	60¢60¢10¢
Griffith's Solid C. S. R. R. Goods.....	20¢
Old Colony (Sanford Fork & Tool Co.) 20¢	
St. Louis Shovel Co.....	20¢20¢75¢
Hussey, Binns & Co.....	15¢25¢
Hubbard & Co.....	20¢20¢75¢
Lehigh Mfg. Co.....	50¢10¢
Payne Pettibone & Son, list January, 1886.....	30¢
Remington's (Lowman's) Pat. 30¢10¢40¢	
Rowland's, Black Iron.....	50¢10¢
Rowland's Steel.....	60¢5¢60¢10¢
Shovels and Tongs—	
Iron Head.....	60¢10¢60¢10¢5¢
Brass Head.....	60¢10¢10¢
Skins, Thimble—	
Western list.....	75¢5¢75¢10¢
Columbus Wrt. Steel, list Nov. 1, 1887.....	20¢
Coldbrookdale Iron Co.....	50¢10¢
Union P. S. T. Skins.....	60¢
Utica Turned and Fitted.....	35¢
Sieves—	
Buffalo Metallic, S. S. & Co.....	50¢25¢10¢
Shaker (Barber's Pat.) Flour Sifters.....	20¢
Electric.....	20¢20¢
Hunter's.....	20¢20¢
Smith's Adjustable Sifters.....	20¢20¢
Smith's Adjustable Milk Strainer.....	20¢20¢
Smith's Adjustable T. & C. Strainer.....	20¢20¢
Staves, Wooden Rim—	
Mesh 18, Nested, 70¢ doz.....	90¢
Mesh 20, Nested, 85¢ doz.....	1.10
Mesh 24, Nested, 1.00 doz.....	1.10
Slates—	
School, by case.....	40¢
Snaps, Harness, &c.—	
Anchor (T. & S. Mfg. Co.).....	65¢
Hotchkiss (Bristol).....	10¢
Hotchkiss.....	10¢
Andrews.....	50¢
Sargent's Patent Guarded.....	70¢10¢10¢
German, new list.....	40¢10¢
Covert, New Patent.....	50¢25¢
Covert, New R. E.....	60¢10¢25¢
Covered Spring.....	60¢10¢10¢
Soldering Irons—	
Covert's Adjustable, list Jan. 1, 1886.....	35¢25¢

Spoke Shaves—	
Iron.....	45¢
Wood.....	30¢
Bailey's (Stanley R. & L. Co.).....	40¢10¢
Stearns.....	20¢10¢30¢
Spoke Trimmers—	
Bonney's.....	70¢ doz \$10.00, 50¢
Stearns.....	20¢10¢
Ives, No. 1, \$15.00; No. 2, \$12.00 70¢ doz.	
Douglas.....	55¢10¢
Spoons and Forks—	
Tinned Iron—	
Basting, Cen. Stamp Co.'s list.....	70¢10¢
Solid Table and Tea, Cen. Stamp Co.'s list.....	70¢10¢
Buffalo S. S. & Co.....	35¢25¢
Silver-Plated—(4 mos. or 5¢ cash 30 days.)	
Meriden Brit. Co., Rogers.....	50¢
C. Rogers & Bros.....	50¢
Rogers & Bros.....	50¢
Reed & Barton.....	50¢
Wm. Rogers Mfg. Co.....	50¢10¢60¢
Simpson, Hall, Miller & Co.....	50¢10¢
Holmes & Edwards Silver Co.....	50¢10¢5¢
L. Boardman & Son.....	50¢10¢
Miscellaneous	
Holmes & Edwards Silver Co.: No. 37 Mexican Silver.....	50¢10¢5¢
No. 30 Silver Metal.....	50¢10¢5¢
No. 24 German Silver.....	50¢10¢5¢
No. 50 Nickel Silver.....	50¢
No. 49 Nickel Silver.....	50¢10¢
German Silver.....	50¢50¢5¢
German Silver, Hall & Elton.....	50¢5¢ cash
Nickel Silver.....	50¢5¢50¢10¢5¢ cash
Britannia.....	60¢
Boardman's Nickel Silver.....	50¢
Boardman's Britannia Spoons, case lots.....	60¢
Springs—	
Elliptic, Concord, Platform and Half Scroll.....	60¢60¢5¢
Cliff's Bolster Springs.....	25¢
Squares—	
Steel and Iron.....	75¢10¢80¢
Nickel-Plated.....	full cas. ex. 10¢
Try Square and T Bevels.....	60¢10¢60¢10¢
Disston's Try Square and T Bevels.....	45¢10¢
Winterbottom's Try and Miter.....	30¢10¢
Starrett's Micrometer Caliper Squares.....	25¢
Avery's Flush Bevel Squares.....	40¢
Avery's Bevel Protractor.....	50¢
Standard Fibre Ware—	
Per Dozen.	Plain. Dec'd
Wash Basins, 10½ in.....	\$2.00
Wash-Basins, 12 in.....	2.25
Keelers, 11½ in.....	2.75
Cuspidors.....	8.00
Spittoons, "Daisy," 8 in.....	4.00
Peck Measure.....	4.00
Half-peck Measure.....	3.00
See also Falls.	
Staples—	
Fence Staples, Galvanized.....	Same price as 3rd Wire
Fence Staples, Plain.....	See Trd. Rep.
Steelyards—	
40¢10¢50¢	
Stocks and Dies—	
Blacksmith's.....	
Waterford Goods.....	30¢5¢30¢10¢
Butterfield's Goods.....	30¢5¢30¢10¢
Lightning Screw Plate.....	25¢30¢
Reece's New Screw Plates.....	33¢5¢40¢
Reversible Ratchet.....	30¢
Stone—	
Hindostan No. 1, 3¢; Aze, 3½¢; Slips No. 1, 4¢	
Sand Stone.....	2¢4¢
Washita Stone, Extra.....	10¢12¢
Washita Stone, No. 1.....	14¢16¢
Washita Stone, No. 2.....	10¢11¢
Washita Slips, No. 1, Extra.....	30¢35¢
Washita Slips, No. 1, Extra.....	24¢25¢
Arkansas Stone, No. 1, 4 to 9 in.....	\$1.50
Arkansas Stone, No. 1, 6 to 9 in.....	\$1.85
Turkey Oil Stone, 4 to 8 in.....	40¢
Japanese.....	\$1.00
Lake Superior, Chase.....	16¢
Lake Superior Slips, Chase.....	31¢32¢
Seneca Stone, Red Paper Brand.....	18¢20¢
Seneca Stone, High Grounds.....	20¢25¢
Seneca Stone, Small Whets.....	25¢40¢
Stone Polish—	
Joseph Dixon's.....	70¢ 86.00, 10¢
Gem.....	40¢ 54.50, 10¢
Gold Medal.....	70¢ 86.00, 25¢
Mirror.....	70¢ 86.00, 10¢
Lustro.....	70¢ 86.00, 10¢
Ruby.....	70¢ 86.00, 10¢
Rising Sun, 5 gro lots.....	70¢ 86.00, 10¢
Dixon's Plumbago.....	70¢ 86.00, 10¢
Boynton's Noon Day.....	70¢ 86.00, 10¢
Parlor Pride Stone Enamel.....	70¢ 86.00, 10¢
Yates' Liquid.....	70¢ 86.00, 10¢
Yates Standard Paste Polish, 10 lb cans.....	70¢ 86.00, 10¢
Jet Black.....	70¢ 86.00, 10¢
Japanese.....	70¢ 86.00, 10¢
Firestone.....	70¢ 86.00, 10¢
Diamond O. K. Enamel.....	70¢ 86.00, 10¢
Bonnett's Liquid Stove Polish.....	70¢ 86.00, 10¢
Bonnett's Paste Stove Polish.....	70¢ 86.00, 10¢
Black Eagle Benzine Paste, 5 and 10 lb cans.....	70¢ 86.00, 10¢
Black Jack Water Paste, 5 and 10 lb cans.....	70¢ 86.00, 10¢
Nickel Plate Paste.....	70¢ 86.00, 10¢
Tacks, Brads, &c.—	
List, Jan. 2, 1888.—(Note.—Some manufacturers are selling Tacks at slightly higher prices than those named.)	
American Iron Carpet, Blued.....	80¢
American Iron Carpet, Tinned.....	80¢10¢10¢
Steel Carpet, Blued.....	80¢
Steel Carpet, Tinned.....	80¢10¢10¢
Swedes Iron Carpet, Blued.....	80¢
Swedes Iron Carpet, Tinned.....	80¢10¢10¢
American Iron Cut.....	75¢75¢10¢5¢
Swedes Iron.....	75¢5¢75¢10¢5¢
Swedes Iron, Upholsterers.....	75¢10¢80¢
Tinned Swedes Iron.....	75¢10¢80¢
Tinned Swedes Iron, Upholsterers.....	75¢10¢80¢
Gimp and Lace.....	75¢10¢80¢
Tinned Gimp and Lace.....	75¢10¢80¢
Swedes Iron Trimmers.....	75¢10¢75¢10¢5¢
Swedes Iron Miners.....	75¢10¢75¢10¢5¢
Swedes Iron Bill Posters or Railroad.....	75¢10¢75¢10¢5¢

Swedes Steel (Swedes Iron price list).	
80¢80¢5¢	
Copper Tacks.....	
50¢10¢	
Copper Finishing, Trunk and Clout Nails.....	
50¢10¢	
Finishing Nails.....	
75¢75¢5¢	
Trunk and Clout Nails.....	
70¢10¢	
Tinned Trunk and Clout Nails.....	
70¢10¢	
Basket Nails.....	
70¢10¢	
Common and Patent Brads.....	
70¢10¢	
Hungarian Nails.....	
70¢10¢	
Chair Nails.....	
70¢10¢	
Zinc Glaziers' Points.....	
50¢50¢5¢	
Cigar Box Nails.....	
50¢10¢50¢10¢5¢	
Picture-Frame Points.....	
50¢10¢50¢10¢5¢	
Looking-Glass Tacks.....	
50¢10¢50¢10¢5¢	
Leathered Carpet.....	
50¢10¢50¢10¢5¢	
Brush Tacks.....	
50¢10¢50¢10¢5¢	
Shoe Finders, List Jan. 2, 1888.....	
10¢10¢5¢	
Lining and Saddle Nails, List Jan. 1, 1886.....	
10¢10¢	
Silvered.....	
30¢10¢10¢	
Japanned.....	
20¢10¢10¢	
Double-Pointed Tacks.....	
85¢	
Wire Carpet Nails.....	
50¢10¢	
Wire Brads and Nails, see Nails, Wire.	
Steel Wire Brads, R. & E. Mfg. Co.'s list.....	
50¢10¢	
Tap Borers—	
Common and Kind.....	20¢10¢
Ive's Tap Borers.....	33¢45¢
Enterprise Mfg. Co.....	20¢10¢30¢
Clark's.....	33¢35¢
Tapes, Measuring—	
American.....	33¢35¢35¢5¢
Spring.....	40¢
Chesterman's, Regular list.....	
25¢30¢	
Thermometers—	
80¢80¢10¢	
Tin Case.....	
80¢80¢10¢	
Thimble Skins—See Skins.	
Ties, Bale—Steel	
Standard Wire, list.....	50¢10¢5¢
Tinners' Shears, &c.—	
Shears and Snips (P. S. & W.).....	20¢25¢
Punches, see Punches.	
Snips, J. Mallinson & Co.....	33¢45¢
Tiware—	
Stamped, Japanned and P'd, list Jan. 20 1887.....	75¢75¢5¢
Tire Benders, Upsetters, &c—	
Stoddard's Lightning Tire Upsetters.....	15¢
Detroit Perfected Tire Bender.....	15¢
Tobacco Cutters—	
Champion.....	20¢10¢30¢
Wood Bottom.....	20¢10¢5¢25¢
All Iron.....	20¢10¢5¢
Nashua Lumber Co.'s.....	20¢10¢5¢
Wilson's.....	55¢
Sargent's.....	20¢10¢5¢
Acme.....	20¢10¢5¢
Transom Lifters—	
Wellensak's:	
Class 3 and 4, Bronze Iron.....	50¢
Class 3 and 4, Bronze Metal.....	25¢
Class 3 and 4, Brass.....	35¢
Skylight Lifters.....	35¢
Crown, Eagle and Shield.....	50¢
Reiter's, list Jan. 1, 1887.....	50¢10¢2¢
Bronzed Iron Rods.....	50¢10¢2¢
Brass, Real Bronze or Nickel Plate.....	30¢
Excelsior.....	50¢10¢2¢
Shaw's.....	50¢10¢
Payson's Universal.....	40¢40¢10¢
Traps—	
Game—	
Newhouse.....	40¢40¢5¢
Oneida Pattern.....	70¢70¢10¢
Game, Blake's Patent.....	40¢10¢5¢
Mouse and Rat—	
Mouse, Wood, Choker, 7 doz holes, 11½ doz.....	12¢
Mouse, Round Wire.....	12¢
Mouse, Cage, Wire.....	12¢
Mouse, Catch-'em-alive.....	12¢
Mouse, Bonanza.....	12¢
Mouse, Delusion.....	12¢
Rat, Decoy.....	12¢
Ideal.....	12¢
Cyclone.....	12¢
Hotchkiss Metallic Mouse, 5-hole traps.....	12¢
In full cases.....	12¢
Trowels—	
Lothrop's Brick and Plastering.....	25¢25¢5¢
Reed's Brick and Plastering.....	15¢
Disston's Brick and Plastering.....	25¢25¢10¢
Pease's Plastering.....	25¢
Clement & Maynard.....	25¢
Rose's Brick.....	15¢20¢
Brick's Brick.....	25¢
Worrall's Brick and Plastering.....	20¢
Garden.....	70¢
Triers—	
Butter and cheese.....	25¢
Trucks, Warehouse, &c.—	
B. & L. Block Co.'s list, '82.....	40¢
 Tubes, Boiler—	
See Pipe.	
Twine—	
Flax Twine.....	BC. B.
No. 9, 1/4 and 1/2 B. Balls.....	22¢ 30¢
No. 12, 1/4 and 1/2 B. Balls.....	21¢ 29¢
No. 18, 1/4 and 1/2 B. Balls.....	18¢ 28¢
No. 24, 1/4 and 1/2 B. Balls.....	18¢ 28¢
No. 36, 1/4 and 1/2 B. Balls.....	16¢ 27¢
No. 24, Mattress, 1/4 and 1/2 B. Balls.....	48¢50¢
Chalk Line, Cotton, 1/4 B. Balls.....	25¢
Mason Line, Linen, 1/4 B. Balls.....	55¢
2-Ply Hemp, 1/4 and 1/2 B. Balls (Spring Twine).....	11¢4¢
3-Ply Hemp, 1 B. Balls.....	12¢13¢4¢
3-Ply Hemp, 1 1/2 B. Balls.....	11¢11¢4¢
Cotton Wrapping, 5 Balls to lb.....	15¢16¢
2, 3, 4 and 5-Ply Jute, 1/4 B. Balls.....	10¢
Wool.....	6¢6¢6¢
Paper.....	13¢14¢
Cotton Mops, 6, 9, 12 and 15 lb to doz.....	18¢

Vices—	
Solid Box.....	60¢60¢5¢
Parallels—	
Fisher & Norris Double Screw.....	15¢10¢
Stephens.....	25¢30¢
Parker's.....	20¢25¢
Wilson's.....	55¢
Howard's.....	40¢10¢
Bonney's.....	40¢10¢
Millers Falls.....	40¢40¢10¢
Trenton.....	40¢5¢40¢10¢
Merrill's.....	15¢20¢
Sargent's.....	60¢10¢10¢
Backus and Union.....	40¢
Double Screw Leg.....	15¢10¢
Prentiss.....	20¢25¢
Simpson's Adjustable.....	40¢
Moore's.....	20¢
Saw Filers—	
Bonney's, Nos. 2 & 3, \$15.00.....	40¢10¢
Stearns.....	33¢10¢3

CURRENT METAL PRICES.

SEPTEMBER 11, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
1 to 2 in. round and square...	1 lb 1.90 @ ..
1 to 6 in. x 1/2 to 1 in.	1 lb 2.00 @ 2.10
Refined Iron:	
1 to 2 in. round and square...	1 lb 2.00 @ 2.10
1 to 4 in. x 1/2 to 1 in.	1 lb 2.20 @ 2.30
4 1/2 to 6 in. x 1/2 to 1 in.	1 lb 2.20 @ 2.30
1 to 6 in. x 1/2 and 5-16	1 lb 2.20 @ 2.30
Rods—1/2 and 1-1/2 round and sq.	1 lb 2.10 @ 2.20
Bands—1 to 6 x 3-16 to No. 12	1 lb 2.20 @ 2.30
"Burden Best" Iron, base price.....	1 lb 3.00 @ ..
Burden's "H. B. & S." Iron, base price.....	1 lb 2.80 @ ..
"Ulster"	1 lb 3.00 @ ..
Norway Rods	4 lb 5.00 @ ..

Merchant Steel from Store.

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	3 1/2
Best Cast Steel, base price in small lots	8
Best Cast Steel Machinery, base price in small lots	5

Sheet Iron from Store.

Common American.	R. G. Cleaned.
10 to 16.....	1 lb 2.75 @ 2.80
17 to 20.....	1 lb 2.85 @ 3.00
21 to 24.....	1 lb 3.00 @ 3.10
25 and 26.....	1 lb 3.20 @ 3.50
27.....	1 lb 3.35 @ 3.75
28.....	1 lb 3.50 @ 4.00
B. B.	2d qual.
Galv'd, 14 to 20.....	1 lb 4.50 @ 4.88
Galv'd, 1 to 24.....	1 lb 4.87 1/2 @ 4.75
Galv'd, 25 to 26.....	1 lb 5.25 @ 5.12
Galv'd, 27.....	1 lb 5.62 1/2 @ 5.48
Galv'd 28.....	1 lb 6.00 @ 5.85
Patent Planished.....	1 lb A 10 1/2 B, 8 1/2
Russia.....	1 lb 9 1/2 @ 10 1/2
American Cold Rolled B. B.....	1 lb 5 1/2 @ 7 1/2
Craig Polished Sheet Steel.....	1 lb 5 1/2 @ 7 1/2

English Steel from Store.

Best Cast.....	1 lb 15
Extra Cast.....	1 lb 16 1/2
Swaged, Cast.....	1 lb 16
Best Double Shear.....	1 lb 15
Bilster, 1st quality.....	1 lb 12
German Steel, Best.....	1 lb 10
2d quality.....	1 lb 9
3d quality.....	1 lb 8
Sheet Cast Steel, 1st quality.....	1 lb 15
2d quality.....	1 lb 14
3d quality.....	1 lb 12 1/2

METALS.

Tin.

Banca, Pigs.....	23 1/2
Straits, Pigs.....	22 1/2
English, Pigs.....	22 1/2
Straits in Bars.....	22 1/2

Tin Plates.

Charcoal Plates.—Bright.	Per box.
Melyn Grade.....	1 lb 5.75 @ 6.00
" ".....	1 lb 6.00 @ 6.25
" ".....	1 lb 5.75 @ 6.00
" ".....	1 lb 12.00 @ 12.50
" ".....	1 lb 7.25 @ 7.50
" ".....	1 lb 7.50 @ 7.75
" ".....	1 lb 7.25 @ 7.50
" ".....	1 lb 15.00 @ 15.50
" ".....	1 lb 5.50 @ 5.75
" ".....	1 lb 7.00 @ 7.25
Call and Grade.....	1 lb 5.75 @ 6.00
" ".....	1 lb 6.00 @ 6.25
" ".....	1 lb 5.75 @ 6.00
" ".....	1 lb 7.25 @ 7.50
" ".....	1 lb 7.50 @ 7.75
" ".....	1 lb 7.25 @ 7.50
Allaway Grade.....	1 lb 5.00 @ 5.12 1/2
" ".....	1 lb 5.12 1/2 @ 5.25
" ".....	1 lb 5.00 @ 5.12 1/2
" ".....	1 lb 11.00 @ 11.50
" ".....	1 lb 6.00 @ 6.25
" ".....	1 lb 6.25 @ 6.50
" ".....	1 lb 6.00 @ 6.25
" ".....	1 lb 12.00 @ 12.50
" ".....	1 lb 4.75 @ 5.00
" ".....	1 lb 5.75 @ 6.00
Coke Plates.—Bright.	
Steel Coke, —IC, 10 x 14, 14 x 20.....	1 lb 4.75 @ 5.00
" ".....	1 lb 7.25 @ 7.50
" ".....	1 lb 9.75 @ 10.25
" ".....	1 lb 5.50 @ 5.75
BV Grade.—IC, 10 x 14, 14 x 20.....	1 lb 4.40 @ 4.60
Charcoal Plates.—Terne.	
Dean Grade.—IC, 14 x 20.....	1 lb 4.35 @ 4.62 1/2
" ".....	1 lb 8.75 @ 9.25
" ".....	1 lb 5.40 @ 5.62 1/2
" ".....	1 lb 11.00 @ 11.37 1/2
Abecarne Grade.—IC, 14 x 20.....	1 lb 4.25 @ 4.50
" ".....	1 lb 8.45 @ 9.00
" ".....	1 lb 5.25 @ 5.50
" ".....	1 lb 10.50 @ 10.80

Coke Plates.—Bright.

Steel Coke, —IC, 10 x 14, 14 x 20.....	1 lb 4.75 @ 5.00
" ".....	1 lb 7.25 @ 7.50
" ".....	1 lb 9.75 @ 10.25
" ".....	1 lb 5.50 @ 5.75
BV Grade.—IC, 10 x 14, 14 x 20.....	1 lb 4.40 @ 4.60
Charcoal Plates.—Terne.	
Dean Grade.—IC, 14 x 20.....	1 lb 4.35 @ 4.62 1/2
" ".....	1 lb 8.75 @ 9.25
" ".....	1 lb 5.40 @ 5.62 1/2
" ".....	1 lb 11.00 @ 11.37 1/2
Abecarne Grade.—IC, 14 x 20.....	1 lb 4.25 @ 4.50
" ".....	1 lb 8.45 @ 9.00
" ".....	1 lb 5.25 @ 5.50
" ".....	1 lb 10.50 @ 10.80

Tin Boiler Plates.

IXX, 14 x 26.....	112 sheets.....	\$12.50 @ \$12.75
IXX, 14 x 28.....	112 sheets.....	12.75 @
IXX, 14 x 31.....	112 sheets.....	14.25 @

Copper.

Duty: Pig, Bar and ingot, 4¢; Old Copper, 3¢ 1/2. Manufactured (including all articles of which Copper is a component of chief value), 45 ¢ ad valorem.

Ingot.

Lake.....	@ 13 1/2
Anchor " Brand.....	@ 12 1/2

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, May 23, 1889, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72	30	30	30	21	22	23	26	28	
30	72	30	30	30	21	22	23	26	28	
30	96	30	30	30	21	22	23	26	28	
30	96	30	30	30	21	22	23	26	28	
48	96	30	30	30	21	22	23	26	28	
60	96	30	30	30	21	22	23	26	28	
60	96	30	30	30	21	22	23	26	28	
84	96	30	30	30	21	22	23	26	28	
84	96	30	30	30	21	22	23	26	28	
Over 84 in. wide			23	25						

All Bath Tub Sheets..... 16 oz. 14 oz. 12 oz. 10 oz.

Per pound..... 0.52 0.55 0.57 0.60

Bolt Copper, 1/2 inch diameter and over, per pound..... 30¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

14 ounce to square foot and heavier..... 23¢

12 ounce and up to 14 ounce to square foot..... 24¢

10 ounce and up to 12 ounce..... 26¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢

Tinning sheets on one side, 30 x 60 each..... 30¢

For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each..... 15¢

For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each..... 12¢

For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each..... 12¢

Tinning sheets on one side, other sizes, per square foot..... 21¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 and 16 oz. and heavier..... 31¢ By the case..... 30¢ 1/2

12 oz. and lighter..... 33¢ By the case..... 32¢ 1/2

14 and 16 oz. and heavier..... 44¢ 12 oz..... 37¢ 1/2

Seamless Brass and Copper Tubes.

O. G.	N. G.	1/2	3/4	1	1 1/2
8-14	6-12	35	31	28	27
15	13	36	31	29	28
16	14	37	32	30	29
17	15	38	33	31	30
18	16	40	34	32	31
19	17	41	35	33	32
20	18-19	42	37	35	34
21	20	44	39	37	36
22	21	46	40	38	37
23	22	48	42	40	39
24	23	51	44	42	41
25	24	54	47	44	43

Copper, Bronze and Gilding Tube, 2¢ 1/2 additional.

Brased Brass Tubing. (To No. 20, inclusive.)

Above 5-16 inch to 3 inch, inclusive..... 35¢

Plain, above 3 inch..... 45¢

Plain, 5-16 inch..... 45¢

Plain, 1/4 inch..... 60¢

Plain, 3-16 inch..... 1.00

Fancy Tubing, Brass, to No. 20, inclusive..... 43¢

brass Tubing, 3¢ 1/2 more than Brass.

Discount from list..... 25 @ 30 %

Roll and Sheet Brass.

Discount from list..... 25 @ 30 %

High Brass Rods.

Over 1 inch diameter..... 27¢

1/4 inch to 1 inch diameter, both inclusive..... 24¢

No. 8 and less than 1/4 inch diameter..... 26¢

Smaller than No. 8..... 30¢

Hexagon, Octagon and Square, 2¢ 1/2 advance over Round Rods.

Spelter.

Duty: Pig, Bars and Plates, 1.50 ¢ 100 lb.

Western Spelter..... 51¢ @ 6¢

"Bergenport"..... 8¢

"Bertha"..... 7 1/2 @ 8¢

Zinc.

Duty: Sheet, 2 1/2 ¢ 100 lb. 600 lb casks..... 61¢ 1/2

Per lb..... 7 1/2 ¢

Lead.

Duty: Pig, 52 ¢ 100 lb. Old Lead, 2¢ 1/2 100 lb. Pipe and Sheets, 3¢ 1/2 100 lb.

American..... 43¢

Newark..... 43¢

Bar..... 43¢

Pipe, subject to trade discount..... 0 ¢

Tin-Lined Pipe, subject to trade discount..... 15¢

Block Tin Pipes, subject to trade discount..... 45¢

Sheet, subject to trade discount..... 63¢

Solder.

1/2 @ 1/2 (Guaranteed)..... 14¢

Extra Wiping..... 12 1/2 ¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson..... 10¢

Hallett's..... 17¢

Fittings.

Cast Iron Fittings, Black and Galvanized..... 75¢ to 10 ¢

Cast Iron Fittings, Bushings and Plugs..... 80 ¢

Cast Iron Fittings, Flanges..... 75¢ to 10 ¢

Malleable Iron Bushings..... 80¢ to 80¢ 1/2

Malleable Iron Unions..... 70¢ to 70¢ 1/2

Malleable Iron American Unions..... 55 ¢

Malleable Iron Unions, Keystone..... 55 ¢

Wrought-Iron Nipples..... 75¢ to 10 ¢

Wrought-Iron Couplings..... 70 ¢

Wrought-Iron Long Screws..... 70¢ to 70¢ 1/2

Casting Fittings..... 60 ¢

Malleable Iron Fittings..... 40¢ to 40¢ 1/2

Valves, Cocks, &c.

Iron Body Valves..... 70 ¢

Throttle Valves, Iron Body..... 70 ¢

All-Iron Valves..... 65 ¢

Compression Gauge Cocks..... 60 ¢

Mississippi Gauge Cocks..... 60 ¢

Register Gauge Cocks..... 65¢ to 65¢ 1/2

Air Cocks and Radiator Air Cocks..... 65¢ to 65¢ 1/2

Steam Gauge Cocks..... 60 ¢

Oil Cups, Plain, Elbow, new pattern, T and Lever Handle..... 65¢ to 65¢ 1/2

Globe Oil Cup..... 55 ¢

Common Lubricators..... 65¢ to 65¢ 1/2

Lubricators with Air Cocks..... 65¢ to 65¢ 1/2

Iron Body Lubricators..... 60 ¢

Steam Whistles..... 65 ¢

Whistle Valves..... 65 ¢

Water Gauges..... 65 ¢

Brass Expansion Joints..... 55 ¢

Pump Valves..... 55 ¢

Soldering Unions..... 65 ¢

Soldering Nipples..... 70 ¢

Brass Unions (Union Joints)..... 65 ¢

Radiator Nipples..... 6 ¢

Fusible Plugs..... 60 ¢

Oil Pumps..... 55 ¢

Self-Acting Air Valves..... 65 ¢